
UNION OF CONCERNED SCIENTISTS

August 27, 1992

Dr. Obaid Siddiqi
Molecular Biology Unit
Tata Inst of Fund Research
Homi Bhabha Road, Bombay
India 400005

Dear Dr. Siddiqi:

The increasing pressure on the global systems that we and all life depend on has now become a grave concern. Present human activities are putting our world at risk, and there is little sign of a change in course.

This letter is to request that you join with us in signing the enclosed "World Scientists' Warning to Humanity" to emphasize to all peoples the urgent need for change.

In brief, the Warning outlines the stress on the global environment and on important resources posed by mismanagement, overconsumption, and continued population growth. It emphasizes the obstacles to reducing and eliminating this stress, and sets out the nature of the changes that will be needed.

The Warning is being mailed to the world community of senior scientists, asking for their endorsement. The Union of Concerned Scientists will be using these endorsements as the opening of a sustained campaign in the United States, Europe, and elsewhere in support of public education about the problems that lie ahead.

The campaign's aim is to improve public knowledge of threats to our global systems and to gain support for the necessary changes. The main issues are set out in the statement, issues that we are sure you are familiar with. They badly need authoritative telling, something the scientific community has the credibility to effect. Please join us.

Your endorsement will be strictly limited to the contents of the Warning and will be made public by the Union of Concerned Scientists. Your institutional affiliation will be listed for identification purposes only. If you wish, please add a few sentences of comment that could be made public along with the Warning. All signatories will be sent a final list of endorsers.

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If you agree, kindly return your statement of agreement to the Union of Concerned Scientists, 26 Church Street, Cambridge, Mass. 02238, USA.

Sincerely,

*Christian Anfinsen**
Christian Anfinsen*
Johns Hopkins University

Norman Borlaug
Norman Borlaug*
Wheat Improvement Center, Mexico

Carlos Chagas
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WORLD SCIENTISTS' WARNING TO HUMANITY

INTRODUCTION

Human beings and the natural world are on a collision course. Human activities inflict harsh and often irreversible damage on the environment and on critical resources. If not checked, many of our current practices put at serious risk the future that we wish for human society and the plant and animal kingdoms, and may so alter the living world that it will be unable to sustain life in the manner that we know. Fundamental changes are urgent if we are to avoid the collision our present course will bring about.

THE ENVIRONMENT

The environment is suffering critical stress:

The Atmosphere

Stratospheric ozone depletion threatens us with enhanced ultra-violet radiation at the earth's surface, which can be damaging or lethal to many life forms. Air pollution near ground level, and acid precipitation, are already causing widespread injury to humans, forests and crops.

Water Resources

Heedless exploitation of depletable ground water supplies endangers food production and other essential human systems. Heavy demands on the world's surface waters have resulted in serious shortages in some 80 countries, containing 40% of the world's population. Pollution of rivers, lakes and ground water further limits the supply.

Oceans

Destructive pressure on the oceans is severe, particularly in the coastal regions which produce most of the world's food fish. The total marine catch is now at or above the estimated maximum sustainable yield. Some fisheries have already shown signs of collapse. Rivers carrying heavy burdens of eroded soil into the seas also carry industrial, municipal, agricultural, and livestock waste - some of it toxic.

Soil

Loss of soil productivity, which is causing extensive land abandonment, is a widespread byproduct of current practices in agriculture and animal husbandry. Since 1945, 11% of the earth's vegetated surface has been degraded - an area larger than India and China combined -and per capita food production in many parts of the world is decreasing.

Forests

Tropical rain forests, as well as tropical and temperate dry forests, are being destroyed rapidly. At present rates, some critical forest types will be gone in a few years, and most of the tropical rain forest will be gone before the end of the next century. With them will go large numbers of plant and animal species.

Living Species

The irreversible loss of species, which by 2100 may reach one third of all species now living, is especially serious. We are losing the potential they hold for providing medicinal and other benefits, and the contribution that genetic diversity of life forms gives to the robustness of the world's biological systems and to the astonishing beauty of the earth itself.

Much of this damage is irreversible on a scale of centuries or permanent. Other processes appear to pose additional threats. Increasing levels of gases in the atmosphere from human activities, including carbon dioxide released from fossil fuel burning and from deforestation, may alter climate on a global scale. Predictions of global warming are still uncertain — with projected effects ranging from tolerable to very severe — but the potential risks are very great.

Our massive tampering with the world's interdependent web of life — coupled with the environmental damage inflicted by deforestation, species loss, and climate change — could trigger widespread adverse effects, including unpredictable collapses of critical biological systems whose interactions and dynamics we only imperfectly understand.

Uncertainty over the extent of these effects cannot excuse complacency or delay in facing the threats.

POPULATION

The earth is finite. Its ability to absorb wastes and destructive effluent is finite. Its ability to provide food and energy is finite. Its ability to provide for growing numbers of people is finite. And we are fast approaching many of the earth's limits. Current economic practices which damage the environment, in both developed and underdeveloped nations, cannot be continued without the risk that vital global systems will be damaged beyond repair.

Pressures resulting from unrestrained population growth put demands on the natural world that can overwhelm any efforts to achieve a sustainable future. If we are to halt the destruction of our environment, we must accept limits to that growth. A World Bank estimate indicates that world population will not stabilize at less than 12.4 billion, while the United Nations concludes that the eventual total could reach 14 billion, a near tripling of today's 5.4 billion. But, even at this moment, one person in five lives in absolute poverty without enough to eat, and one in ten suffers serious malnutrition.

No more than one or a few decades remain before the chance to avert the threats we now confront will be lost and the prospects for humanity immeasurably diminished.

WARNING

We the undersigned, senior members of the world's scientific community, hereby warn all humanity of what lies ahead. A great change in our stewardship of the earth and the life on it, is required, if vast human misery is to be avoided and our global home on this planet is not to be irretrievably mutilated.

WHAT WE MUST DO

Five inextricably linked areas must be addressed simultaneously:

1. **We must bring environmentally damaging activities under control to restore and protect the integrity of the earth's systems we depend on.**

We must, for example, move away from fossil fuels to more benign, inexhaustible energy sources to cut greenhouse gas emissions and the pollution of our air and water. Priority must be given to the development of energy sources matched to third world needs — small scale and relatively easy to implement.

We must halt deforestation, injury to and loss of agricultural land, and the loss of plants, animals, and marine species.

2. **We must manage resources crucial to human welfare more effectively.**

We must give high priority to efficient use of energy, water, and other materials, including expansion of conservation and recycling.

3. **We must stabilize population. This will be possible only if all nations recognize that it requires improved social and economic conditions, and the adoption of effective, voluntary family planning.**

4. **We must reduce and eventually eliminate poverty.**

5. **We must insure sexual equality, and guarantee women control over their own reproductive decisions.**

The developed nations are the largest polluters in the world today. They must greatly reduce their overconsumption, if we are to reduce pressures on resources and the global environment. The developed nations have the obligation to provide aid and support to developing nations, because only the developed nations have the financial resources and the technical skills for these tasks.

Acting on this recognition is not altruism, but enlightened self-interest: whether industrialized or not, we all have but one lifeboat. No nation can escape from injury when global biological systems are damaged. No nation can escape from conflicts over increasingly scarce resources. In addition, environmental and economic instabilities will cause mass migrations with incalculable consequences for developed and undeveloped nations alike.

Developing nations must realize that environmental damage is one of the gravest threats they face, and that attempts to blunt it will be overwhelmed if their populations go unchecked. The greatest peril is to become trapped in spirals of environmental decline, poverty, and unrest, leading to social, economic and environmental collapse.

Success in this global endeavor will require a great reduction in violence and war. Resources now devoted to the preparation and conduct of war — amounting to over \$1 trillion annually — will be badly needed in the new tasks and should be diverted to the new challenges.

A new ethic is required — a new attitude towards discharging our responsibility for caring for ourselves and for the earth. We must recognize the earth's limited capacity to provide for us. We must recognize its fragility. We must no longer allow it to be ravaged. This ethic must motivate a great movement, convincing reluctant leaders and reluctant governments and reluctant peoples themselves to effect the needed changes.

The scientists issuing this warning hope that our message will reach and affect people everywhere. We need the help of many.

We require the help of the world community of scientists — natural, social, economic, political;

We require the help of the world's business and industrial leaders;

We require the help of the world's religious leaders; and

We require the help of the world's peoples.

We call on all to join us in this task.