Mr. Chairman and Senators:

My name is Doak C. Cox. I am Director of the University of Hawaii Environmental Center.

From both governmental documentation and press coverage I get the impression that reports, reviews, and statements of our Environmental Center have come to be regarded as having a high degree of validity. If this is so, it is because they are generally products of the efforts of many people in many disciplines. It is our view that environmental problems are inherently multi-dimensional, and that no one person can be an expert in all of the disciplines involved in their study and solution. This statement is an exception. Our involvement in multi-disciplinary efforts of a number of kinds inside and outside the university has been so heavy that the preparation of the statement was delayed to the point that no appropriate review has been possible. It is, therefore, a personal product. Such breadth of understanding as may be displayed is the result of the contacts I have had through my position in our multi-dimensional Center, but such narrowness as may be apparent should not be attributed to the Center or the University community on which it draws.

It is difficult to be brief in addressing the wide range of concerns of your Committee. The oversimplification of brevity may even be dangerous. However, I trust that there will be further occasions on which our Center may contribute to your efforts, occasions on which we can expand on questions too hastily treated now. Your efforts are of vital importance, and we hope to facilitate as well as possible your access to the kinds of understanding of our environment that an academic community such as the university can provide.

It seems to me extremely important that we review from time to time the status of our environment and our goals and recheck the bearings of our efforts. The initiation of your work is an appropriate time for such a review.

It is my view that the human species is headed toward an unpleasant future if not an early end, unless we drastically reorient our technology and its social controls. This does not mean, however, that we can or should expect or attempt the complete change in direction instantaneously. There is as yet no
consensus as to our ultimate goals. Immediate goals, when we achieve them, frequently turn out not to be what we wanted or to have some very undesirable concomitants. Further, paths that seem to head in the right direction very often veer off or even double back. Changes in direction are in themselves wasteful, and I do not think we can afford much waste. We had better recognize promptly the enormity of the changes required but do some good solid thinking about how to accomplish them.

In Hawaii some of us still seem unaware of how much environmental degradation has occurred and how much we lose because of the degradation. Others, however, exaggerate the degree and rate of degradation and the consequences and refuse to acknowledge the improvements that have already been accomplished or to accept the plans already made for improvements in the near future. Most of us seem still to underestimate the effort that is needed.

Let me use water quality problems as an example, because we have longest been actively concerned with them in the efforts of the last few years. It seems very clear that we could have been farther along than we are now if adequate appropriative and administrative support had been provided since the water quality control authority of the Department of Health was enlarged in 1965. However, statements that we face an overall ecological crisis because of the present rates of water quality deterioration do not take into account the improvements that have been accomplished in the last two or three years because of controls of agricultural and industrial discharges nor the plans and schedules for further improvements to come in the next few years. A strong case can be made that overall, water quality has been improved in the last two or three years and the further improvements in the near future should be very important. Plans, of course, are not final accomplishments, though they are necessary steps toward them. Appropriative support will have to be provided to implement the plans of government agencies, and governmental pressure will have to be maintained to assume the implementation of plans of private persons and institutions.

In air quality control we are less far along, and in noise control we are just starting. For solid waste disposal we seem to have available some satisfactory plans for the immediate future, though in the long term, I think the management of solid wastes may turn out to be more troublesome than the air and water pollution problems. Proper land management will, I am sure, turn out to be at the heart of most of our environmental quality control, but about this I am not prepared to say much now.

I regard the legislature as being the most important branch of the government in the long run in accomplishing the necessary changes in direction. At the moment, however, I do not regard additional legislation as being as critical as the development of administrative competence to implement legislation already passed. Such competence depends upon professional manpower for the development of well-considered administrative policy within the legislated mandate and the judgment of individual cases, and the maintenance of surveillance systems to keep track of environmental quality in general and form the basis for action in problem cases.
Because of the concerns with pollution, much of the administrative burden has fallen on the Department of Health. Its environmental competence should be greatly increased with the appointment, which I understand to be imminent, of a deputy director responsible for environmental matters. It will surely need additional manpower. Additional competence will probably have to be provided to some other departments of the state as well to remedy inadequacies in their concern with the environmental consequences of their actions.

Increased coordination among state departments in environmental matters is clearly needed, but I am not much impressed with proposals to meet the needs by reorganization, for example by the creation of department of environmental affairs. Such reorganization would sacrifice some important existing interconnections in order to achieve new ones.

The Office of Environmental Quality Control was, of course, created to achieve the necessary coordination. Understaffed as it is, and still lacking a permanent Director, the OEQC has already done so much that I see no reason for abandoning the policy making and inter-department coordinating concepts that went in to its design without a thorough trial of its capabilities with adequate manpower and support.

To the OEQC's efforts our Environmental Center is contributing heavily, and I must take a minute or so to explain the predicament in which we find ourselves. Our extremely small staff has been stretched to the limit, yet we cannot keep up with the demands even though we serve mainly as coordinators, relying on the larger University community to supply most of the disciplinary competence—-and work. The response of the University faculty to our indications of need has been astonishingly generous, although we have had to ask for most of the services on a volunteer basis. But this is the same faculty which is being asked to devote more of its time to classroom teaching. The state, and this legislature, cannot expect to get from faculty members the kinds and amount of highly qualified consultation on environmental problems that is needed, and is more easily available at the University than elsewhere, if these same faculty members are not permitted to use part of their time in this way.

I must stress, additionally, the desperate need for better understanding of the environment as a base for policy making. With the best of judgment relying on present knowledge we are certain to make grave and costly mistakes, and both faculty time and funds are needed for research by the University, and funds if it is to be provided by other institutions.

Except for the appropriation of the necessary support, the needs I have discussed are not especially needs which the legislature can meet. There are, minor legislative needs, and we will be pleased to discuss these with you in future meetings. Our testimony on most of the bills that have already been presented and held over until the next session is already on record. It seems to me essential to remember that though the identification of the causes of degradation and the establishment of goals and procedures for reaching these are necessary, the setting of unachievable standards will get us nowhere, the identification and punishment of villains is but a sideline, and the real aim of environmental legislation is the preservation and enhancement of environmental quality as a necessary concomitant of human welfare.
Two special efforts of our Center should be of interest to you. One, now well underway is that of the Hawaii Environmental Simulation Laboratory in whose establishment we joined the Oceanic Institute. This Laboratory is engaged in the development of capabilities for simulation and systems analysis, capabilities to use rigorous methods of analysis as far as they can be carried in determining the consequences of various actions in our complicated socio-ecosystem. The use of such capabilities is, of course, intended to reduce the risk of unintended failures and disasters associated with simulistic linear planning. The Laboratory is, for the present, heavily engaged in a pilot simulation of the effects of land usages on the pollutant loads delivered to Kaneohe Bay, and I would not encourage you to expect much in the way of results directly applicable to your considerations before the next legislature convenes. However, you should be interested in the longer range planning of the laboratory, because the development of such capabilities as it proposes will be essential to the solution of complicated problems.

The other effort is not off the ground yet. Because no other agency appears to be engaged in long range environmental planning, the University President encouraged us in the Environmental Center to take a stab at such planning, recognizing that such plans as we would develop would merely be proposals subject to legislative adoption. We originally hoped to have for the next session a careful review of the environmental system of the state, a discussion of the environmental goals of its citizens, and recommendations for legislation and administrative policy. We have had problems with both finances and manpower, and it became apparent that we could not produce as much as we hoped within the time available. We are still interested in contributing as much as we can within the original time frame in the way of more modest proposals for policy and legislation, and in this effort we are, of course, concerned to keep closely in touch with the activities of this committee. I must confess, however, to being somewhat desperate in the light of the current demands on us for services of a more immediate nature.

I should like in closing to refer briefly to the economics of environmental quality control. Much of my discussion has been related to the need for expanded support of the coordinated efforts of government agencies and the university. In the light of the State's present economic picture the provision of this support clearly presents problems. Much graver problems are, however, presented by the overall costs of environmental quality control, costs that will have to be borne by our industries, and ultimately, most of them by ourselves.

I would point out, however, that our economic future in Hawaii depends upon such control, and that the costs will be much greater if we do not engage in such control with determination sensibly, and with the full use of our intelligence.