

the broad spectrum of information necessary for the development of environmental quality criteria.

The research and development programs of the Department of Defense which have environmental pollution implications are developed in accordance with our systems analyses and our recognition of problems having particular importance to military capability and military installation operation. A conscious effort is being made to extract such information as it may be of use in the larger national problems. Increased attention, as recommended in the President's Science Advisory Council's Report "Restoring the Quality of our Environment," will be given to the possibility of undertaking those pollution abatement investigations which can properly be conducted under Defense auspices. It is recognized that as indicated in the President's Science Advisory Council's Report, military bases do contain a mix of waste disposal problems characteristic of large population centers, and that they do afford an opportunity for examination of possible innovations under controlled conditions. Any such projects, however, obviously must be conducted in such a manner as not significantly to increase the cost of the military establishment nor to produce substantial interference with base missions and activities.

*Prospects for application of military space research and development technology*

In this report there have already been some comments regarding possible application of work done in military and space research and development programs. An extensive evaluation has been accomplished of human adaptation and accommodation requirements. The more important potentials for application of the concepts utilized in these programs are those relating to systems analysis and systems engineering. The military departments have developed considerable experience in this regard. Departmental policies as outlined in the referenced DOD Directive 5100.50 make it necessary that at the earliest point in system development, cognizance be given to the potential problems of environmental pollution and there shall be necessary provisions therefore in the entire program. In effect, the systems analysis effort results in the treating of the environmental pollution problem as a subelement of the overall system. It will be recollected that systems program development involves three general time phases. These are: the conceptual, the acquisition, and the operational. A summary of the considerations which must be examined in addressing the problems of the man-environment relationship is furnished in Table I.

TABLE I.—STEPS IN ENVIRONMENTAL POLLUTION SYSTEMS DEVELOPMENT

1. Determination of potential hazards associated with research, development, and pilot plant operations, and establishment of precautions for employees and neighbors.
2. Participation in operational site selection surveys, so as to take into account health requirements of system personnel; and also possible dangers to adjacent civilian communities.
3. Establishment of criteria for health protection and health promotion of system operators and maintainers, and advice on design of facilities, equipment, and procedures to meet the criteria.
4. Analyze and recommend regarding potential community environmental (air, water, land, livestock, etc.) contamination.
5. Provide for environmental health and medical aspects of accident or disaster situations.
6. Prepare necessary biomedical and health education documents and publications.
7. Participate in systems test programs, to assure adequacy of criteria and health considerations to meet same.
8. Continually maintain required environmental medical surveillance after the system has become operational.

We are concerned with both the system-worker interface and the system-community interface. This technique provides a means whereby at the outset of planning, the need for further research can be established and an approximation of the anticipated costs of pollution abatement and attendant environmental surveillance can be developed. These procedures involve a highly integrated and multi-discipline effort. We are aware of the fact that some industrial organizations follow similar procedures in their new plant developments.

The approach to inclusion of environmental pollution considerations in an actual systems development program can be cited as an example of the use-