

of air pollution and missile and rocket propellant testing. It is true that in the initial phases there has been some reluctance on the part of certain industries to enter into negotiations with local or State pollution abatement authorities to ensure that the programs developed under Department of Defense requirements were acceptable to the local or State authority. By patient, careful and conscientious efforts to ensure a better understanding of these requirements on both sides, in the main, suitable and amicable arrangements have been effected. This requires determined efforts and intelligent leadership on the part of all concerned. It should be remembered that many times the industry knows more about the problem than those in the legislative and enforcement authority. This is particularly true when dealing with new processes or chemicals such as is often the case with Defense associated industry. Because of Department of Defense policies and requirements that environmental pollution control procedures be incorporated into these developmental and production programs, it becomes incumbent upon us to ensure that consistent with the requirements of security, appropriate information is translated to the responsible abatement authorities. Our experiences in dealing with such material as unsymmetrical dimethyl hydrazine, nitrogen tetroxide and fluorine indicate that such cooperative actions can be taken.

*The recycle concept versus consumption pattern*

In a number of military situations, attention has had to be given to the questions of how to provide for what is in effect a closed ecological system. Members of this committee are obviously aware of the need for the recycle in recovery of essential elements from waste associated with the space program. Limitations on power, weight and cubage, as well as the unique characteristics of the space environment make it necessary to provide for water recovery from human wastes for human use and for long term space operations. Consideration of the interrelationship in the waste cycle for regeneration of oxygen and for production of food, in the completely closed ecological system, is not so much waste abatement as resource management.

In the semi-closed ecological environment and ecological system associated with certain other military systems, such as the nuclear powered submarine and underground missile launch control centers and underground command posts which may have to become for periods of time closed systems, similar if not quite as extreme considerations and provisions must be made. While there may not be a direct translation from these unique environmental situations to those of urban communities, it does appear that there are some lessons which can be learned and that there are possibilities within today's technology and engineering capabilities which deserve further investigation. One of these to which some initial thought has been given relates to the possibility of water conservation and reuse associated with high-rise office buildings and living accommodations. While no formal proposals within the military establishment for such projects have yet been developed, some tentative evaluations in this area are being considered. In areas of water shortage, such as in the East Coast multi-metropolitan areas, the problem is not only one of waste abatement and pollution control but also of water quantity. If suitable waste treatment methods can be devised and the necessary sociological accommodation to the utilization of recycled waters can be achieved, the twofold problem of relief of water demand and avoidance of pollution of the receiving streams might well be achieved.

In this connection the cost and benefit factors must be carefully assessed. It may be difficult, if not impossible within existing structures to make the necessary alterations and operational costs of equipment may be of such an order that specialized tax or other benefits may have to be provided to encourage adoption of such measures.

In the field of solid wastes, to a large extent the military departments now do indeed practice a recycle type of activity. The economic value of material no longer useful for the purpose intended has been recognized. Virtually every military installation has a classification, salvage and reclamation yard. Materials which are recognized as having a utility in the civilian economy are offered for sale. Those which have a potential further military utility as a repair, maintenance or small commodity item are reclaimed and processed and only those which can neither be utilized in this manner nor sold for scrap ultimately are disposed of. The volume of the latter, of course, in the Department of Defense is not insignificant. Without this effort, the solid waste disposal problems would be almost insurmountable.