

innovations. In both instances, the projects developed from perceptive observations by scientists originally engaged in work in fields other than air pollution. In the case of work being done by the Sperry-Rand Corp., the observation that variations in the temperature of oxygen interfered with the use of a specific microwave band in communications has led to the development of a promising way of investigating and measuring such meteorological phenomena as temperature inversions and air stagnations, both of which may lead to build-ups of pollution in the air. Use of the microwave probe technique could eliminate the need to employ aircraft to investigate these phenomena. In the case of work being done by the Dalmo-Victor Corp., research in another area led to the development of a promising new means of employing infrared beams to measure concentrations of sulfur oxides in stack gases. An infrared probe, capable of being used from the ground and at some distance from the pollution source, would greatly simplify stack-gas sampling.

Criteria for the planning and conduct of the intramural and extramural research program of the Office of Solid Wastes are based on the purposes stated in section 202(b)(1) of the Solid Waste Disposal Act (Public Law 89-272). The statement is as follows: "The purposes of this Act are (1) to initiate and accelerate a national research and development program for new and improved methods of proper and economic solid waste disposal, including studies directed toward the conservation of natural resources by reducing the amount of waste and unsalvageable materials and by recovery and utilization of potential resources in solid wastes."

The differences between research grants and contracts are significant and important. The grant mechanism, which by policy precludes support to profitmaking organizations, provides support to projects developed by non-Governmental investigators and are reviewed by an outside panel of experts for evaluation. The immediate criteria applied by the study section are (1) The merit of the proposed project; (2) the qualifications of the investigators; (3) the pertinence to the programs of OSW; and (4) likelihood of valid scientific results. Research grants are nondirected in nature, in that the concept is developed by the investigator and supported by the program only if it is considered scientifically meritorious and pertinent to the program of OSW.

The contract program, however, is considered a direct extension of the in-house research program, and proposals, necessarily, are reviewed in a manner different from that for grant proposals. Since the contract operation is an extension of the in-house program, the decision to contract requires that we develop the project protocol and then seek appropriate sources for the conduct of the work. Unsolicited contract proposals which are submitted must fall within the program priority areas to be formally considered. In execution, a contract effort differs from a grant supported effort by virtue of the extensive program participation. Under a contract, the program is in effect buying the time and talent of an investigator and satisfactory performance is achieved through careful contract monitoring.

The type of research which receives support will to a large extent affect the type of innovation which can be expected. Moreover, the direction of the research effort toward the achievement of defined research goals should encourage technological innovation. While it is