

MEMORANDUM

February 18, 1975

TO: Mr. J. T. Michelson, Trustee
Lovelace Foundation for Medical Education and Research

FROM: Dr. R. O. McClellan, Director *RM*
Inhalation Toxicology Research Institute

SUBJECT: Information on Inhalation Toxicology Research Institute (ITRI)

1. Primary Mission and Characteristics

The Inhalation Toxicology Research Institute (ITRI) is a unique national resource whose capabilities are directed to the development of improved knowledge of the biomedical consequences of inhaling airborne materials. Originally concerned exclusively with potential airborne radioactive pollutants from nuclear industry activities, it pursued a course of diversification in recent years by also directing attention to other airborne pollutants such as aerosolized consumer products. During the next several years, the Institute plans to direct increased attention to airborne pollutants arising from non-nuclear generation of electrical power, for example, SO_x and particles from coal-fired plants.

The Inhalation Toxicology Research Institute is operated by the Lovelace Foundation under a no fee, cost-reimbursable prime contract for the U. S. Energy Research and Development Administration (ERDA). Research is also being conducted for the National Institute of Environmental Health Sciences (NIEHS), Food and Drug Administration (FDA), Consumer Product Safety Commission (CPSC) and National Science Foundation (NSF) under agreements between these agencies and ERDA.

The three hallmarks of the Inhalation Toxicology Research Institute are:

- a. The Inhalation Toxicology Research Institute has a problem-solving orientation as contrasted to the discipline-orientation of the typical university.
- b. The Inhalation Toxicology Research Institute uses studies with experimental animals to develop information that may be extrapolated to establish standards for man when inadequate information is available for man and it is not feasible to conduct studies with human subjects.
- c. The Inhalation Toxicology Research Institute uses a multidisciplinary team approach to solving problems. Its staff includes physicists, mathematicians, chemists, biophysicists, biologists, basic biomedical scientists, physicians and veterinarians.

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2. History

a. A research program on the toxicity of inhaled fission product radionuclides was initiated by the Lovelace Foundation in 1960 at the request of the AEC. Initial impetus for the program was derived from concern over potential reactor accidents and effects of radioactivity that might be released in airborne form.

b. The initial program was conducted in Lovelace Foundation facilities on Gibson Boulevard in Albuquerque.

c. Permanent facilities specifically designed for inhalation toxicology research were constructed by the AEC on Kirtland Air Force Base East in 1962-1964 with additions as the program has expanded.

d. Starting in 1969, increased attention was directed to inhaled plutonium and transplutonium radionuclides because of concern related to the toxicity of these materials that will be present in large quantities in the Breeder Reactor Fuel Cycle.

e. In November 1971, research was initiated for NIEHS on the development of models to understand the deposition of inhaled pollutants of all kinds. This effort, started under an interagency agreement between the AEC and NIEHS, was very important because it (1) allowed the expertise developed for studying nuclear problems to be applied to an important non-nuclear problem, and (2) it diversified the funding base of the organization.

f. In 1973, the entire research program was designated the Inhalation Toxicology Research Institute to reflect its broad capabilities in the field of Inhalation Toxicology.

g. In late 1974, the Inhalation Toxicology Research Institute staff (with a strong biomedical orientation) initiated a collaborative effort with the Sandia Laboratories (with a strong Physical Science and Engineering orientation) to develop a simulation model for predicting environmental and human radioactivity and human health effects from the Liquid Metal Fast Breeder Reactor program. Specific funding for this project was requested in January 1975. If this important project is funded so that it can proceed, it will allow an improved assessment of the environmental and health consequences of the controversial Breeder Reactor Program.

h. In early 1974, research was initiated for the FDA and CPSC on the toxicity of airborne materials from aerosolized consumer products, i.e. hair sprays, anti-perspirants, air room fresheners, wall panel cleaners, fabric protectors, etc. The FDA and CPSC research is conducted under interagency agreements between those agencies and ERDA. These are important in further diversifying the funding and research effort of the Inhalation Toxicology Research Institute.

i. In early 1975, approval was received to initiate an Inhalation Toxicology Technician Training Program with funding provided by the NSF through ERDA. This program will assist in meeting the manpower needs of the Institute as well as provide trained personnel for private industry and local, state and national agencies concerned with evaluating air pollution hazards associated with energy production.

3. Current Status and Future

a. Personnel

The Inhalation Toxicology Research Institute has a full-time staff of approximately 150 employees including 30 with doctoral degrees, 10 with master's degrees and 30 with bachelor's degrees. Many of the other employees have specialized job skills.

b. <u>Operating Budget</u>	<u>ERDA</u>	<u>Via Interagency Agreements with ERDA</u>			
		<u>NIEHS</u>	<u>FDA</u>	<u>CPSC</u>	<u>NSF</u>
FY-1975 (current)	\$3,096,000	\$240,000	\$185,000	\$175,000	\$60,000
FY-1976 (Projected from President's Budget)	\$4,097,000	\$300,000	\$207,000	\$230,000	\$80,000

The Institute staff is generally pleased with the increase in ERDA funds for FY-1976, however, additional funds could be used to move more aggressively into research on air pollutants from non-nuclear power sources. There is urgent need for additional research on the effects of pollutants released from both nuclear and non-nuclear energy conversion systems. Especially needed is information on low-level effects described in a manner that will allow decision-makers to assess the relative health costs associated with alternative energy conversion systems and weigh these against the benefits associated with specific systems and decide which systems are appropriate for society's use.

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On February 12, 1975, the Institute submitted a request to ERDA for \$562,000 for funds to be provided by the Department of Commerce under the "Job Opportunities Program" under Title X of the Public Works and Economic Development Act. Most of the requested funds would be used for "advanced hiring" of personnel that could be used permanently in the expanded program that is anticipated if the FY-1976 President's Budget level of funding is realized. These funds would serve to advance the research of vital national interest that is under way at the Inhalation Toxicology Research Institute and at the same time bolster Albuquerque's sagging economy.

c. Construction

ERDA is providing \$2,000,000 in FY-1975 Construction funds to make additions and renovations to the Inhalation Toxicology Research Institute. These facilities should be constructed in CY-1976 and occupied approximately January 1, 1977. They will significantly improve the research capabilities of the Institute, particularly for chronic exposure studies. They are, however, only a stop-gap measure recognizing the substantial number and kind of unsolved air pollution problems facing society that could be advantageously addressed by the ITRI staff.

The major limitation on the broader utilization of the Inhalation Toxicology Research Institute's expertise in solving high priority national problems is lack of facilities. To correct this deficiency, we requested a line-item facility from ERDA for FY-1976 funding anticipating potential occupancy late in 1978. Funding for this facility was deleted in the budgetary belt-tightening within the Office of Management and Budget and the Atomic Energy Commission in the fall of 1974. This project has now been resubmitted to ERDA for FY-1977 funding as the "Airborne Pollutants Toxicity Laboratory" with an estimated cost of \$6,000,000.

It is our intention to provide copies of a proposal for this building to the New Mexico Congressional delegation in early March with a view to its potentially being added into the FY-1976 ERDA budget. This approach seems reasonable in that it would provide a facility required to better meet national needs and at the same time its construction would assist in the recovery of the New Mexico economy, especially the construction industry.

Over the long term, some way must be found to increase the facilities of the Inhalation Toxicology Research Institute to meet ERDA needs as well as the needs of other government agencies such as the FDA, CPSC, NIEHS and EPA. It cannot be emphasized too strongly that the Inhalation Toxicology Research Institute is a

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national resource in an area - the toxicity of airborne materials - in which there are numerous problems both now and in the foreseeable future as man's society becomes more complex. Further, it is apparent that society will demand that the health risks of any new technologies be assessed before the new technology is introduced into society.

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