

## PROBLEMS IN AIRPORT SANITATION<sup>1</sup>

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In discussing airport sanitation, we will discuss a public health program that is believed, based on its comprehensive nature, to have had its inception in Dade County, Florida, in the latter part of 1957. At this time, the sanitarian assigned to off base catering point inspections, was charged with the responsibility of examining construction plans for the new Miami International Airport Terminal, to see if food services and airline servicing areas complied with Federal and State regulations. The sanitarian continued to perform in this capacity until completion of the construction.

In 1958, the new Miami International Airport Terminal was completed and opened to traffic, and because of the magnitude of the facilities made available to the airlines and their passengers, the Dade County Health Officer assigned the same Sanitarian, for full time duty, to the \$26,000,000 plus facility. Using the magnitude of the operation as justification for a full time Sanitarian, it would be well to support the statement with a few statistics, so that as we proceed with the discussion, we can place in proper perspective, the problems to be coped with in this type sanitation program.

The statistics from the 1961 Dade County Port Authority Annual Report reveal the Miami International Airport complex to cover an area of 2,378 acres, with the terminal alone occupying 80 of the acres. Its value at cost is \$100,546,835. It carries 10% of all air traffic in the nation. In 1961 total flight movements numbered 303,571. It ranked first in the international cargo field with 133,355,028 pounds, or a combined total of international and domestic cargo of 193,263,014 pounds. The number of passengers that passed through the terminal was 4,115,616. Since it is a terminating point, routing of in-transit passengers to other cities does not add to the traffic figure (4).

Operating out of Miami International Airport are 11 scheduled domestic air carriers, 20 scheduled foreign air carriers, 45 irregular air carriers, and 23 irregular air taxis.

There are 90 tenants on the airport and 33 terminal shops, plus 4 car rental firms, and a 270 room hotel, said to be the only one of comparable size in the world, located within the terminal area of a major airport. During peak seasons there are between 25,000 and 30,000 tenant employees on the field. Nearby are some 220 aviation related firms employing 28,000 workers.

Food and drink facilities on the field and in the terminal include 9 industrial cafeterias, 3 snack bars, 4 dining rooms, 5 cocktail lounges, 3 airline VIP cocktail lounges, 2 drug fountains, 3 banquet rooms, 225 food and drink vending machines, and 3 flight kitchens. Five other flight kitchens are located off field, nearby.

The above statistics, among many others not pertinent to this discussion, have resulted in Miami International Airport being known as "Aviation City" to the aircraft industry.

Keeping in mind that airports vary in type, size, and operation, and an airport sanitation program is influenced by location and climatic conditions among other factors, the following areas of sanitation have been incorporated in the Miami International program. These areas of Sanitation are: (a) catering point sanitation, (b) airline servicing areas, (c) aircraft sanitation, (d) industrial waste disposal, (e) industrial hygiene, (f) insect and rodent control, (g) terminal sanitation.

The administration of the program requires the application of four codes. They are: (a) "The Handbook of Sanitation for Airlines" (PHS publication No. 308) which notes provisions of Public Health Law 410 for the prevention and spread of communicable disease from foreign countries into the states or possessions, or in interstate commerce; (b) the "Florida State Sanitary Code"; (c) the "South Florida Building Code"; and (d) the "Dade County Port Authority Rules and Regulations."

It should be understood that the problems arising from the Miami operation are the basis for this discussion. It is not intended to infer they are unique to the Miami Airport and neither are they fully representative of sanitation problems at any given airport.

<sup>1</sup>Presented at the 49th Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC. at Philadelphia, Pennsylvania, October 24-27, 1962.

## CATERING POINT SANITATION

Catering point sanitation for the purpose of this discussion is control over flight kitchen operations in the preparation of airline food and beverage service, and its transportation to the aircraft. Problem wise, this type of food service is influenced by climatic conditions. Contrary to weather bureau temperature readings that may appeal to the South Florida tourist, Miami's sub-tropical weather results in temperature readings of 90°F to 120°F on the ramps, in catering trucks, and in flight kitchen areas, the better part of the year.

With these unusual temperature factors and on the premise that very few aircraft operating out of Miami International Airport have mechanical refrigeration, it is indicated that in order to comply with U. S. Public Health Service temperature holding requirements for readily perishable and perishable food and drink, aircraft food and drink be prepared no farther in advance for delivery to the aircraft, than there are temperature holding equipment facilities available, in the flight kitchen.

The arrival of the jet age with the resulting reduced flying time, has been most beneficial in shortening the time food is off temperature aboard the aircraft. In interstate travel, it is rare for food not to be in the process of being served an hour after take-off, from the boarding station.

Flight tray carriers accommodating airline meals have little or no insulation qualities. The carriers are dry iced, but the cooling effect is none other than to delay the rise in temperature of the food in the carrier case. Thus it can be seen this type of food service as it applies to canapes, hors d'oeuvres, sandwiches, salads, seafood cocktails, creamers, certain desserts, etc., requires, in its preparation the starting with well chilled ingredients, and particularly in sandwich preparation, with well chilled bread, which has insulating qualities for the filler.

Under the above stated conditions and during peak seasonal operations, it follows that the flight kitchen will require more refrigeration facilities than the ordinary food establishment. The preparation of hot casseroles for aircraft service entails the use of portable aircraft ovens. This in turn requires the use of oven holding racks in the flight kitchen. Portable aircraft ovens are not equipped with thermometers. The distinct possibility of a defective oven or a defective oven rack unit, requires constant inspection to avoid what could be incubation temperatures in the food being held.

Another problem not common in an ordinary food establishment, but almost a daily occurrence in the flight kitchen, is hardened food soil on multiuse eating and drinking utensils. It is more common on

foreign carriers and results from prolonged storage of the utensils on the aircraft after meal service, and before their arrival in the flight kitchen. This necessitates the use of soak sinks to soften the soil prior to the dishmachine run.

Because of their unique design and construction, the cleaning and sanitizing of aircraft eating and drinking utensils poses a problem, and requires special equipment to accomplish both the cleaning and sanitizing operation. Complicating the matter is the airline company practice to individualize their food and beverage service, as well as the utensils used in its service. In addition, galley construction will vary from aircraft to aircraft and galley equipment is usually not inter-changeable. This for example, because of a last minute change in aircraft for various reasons, could result in the caterer having to repack as many as 178 meals.

In flight kitchens, the requirement of a minimum of food handling in preparation has no meaning. The unique construction of multi-use eating and drinking utensils, and airline specifications as to how food must be arranged on service dishes, requires unlimited finger contact in the packing. The problem here is effecting rigid control over the packer, to prohibit the engaging in any other activity that could adversely affect the food being packed, and in using the flight kitchen hand washing facility, after returning from toilet rooms or lounges.

Equipment and utensil storage is a problem in flight kitchens that service more than one airline. Single service product storage is extensive and galley equipment storage can be out of expected proportion, if foreign carriers are involved. This is due to their practice of constant feeding from take-off to landing and their international cuisine.

Flight kitchens serving in-coming international carriers at Miami International Airport, are required by federal Department of Agriculture regulations, to dispose of food removed from the aircraft, by grinding operations on the premise, with final disposal to the sanitary sewer. This food constitutes prohibited agriculture waste. The City of Miami incinerator is not acceptable to the FDA because the incineration process involves the use of holding bins prior to actual burning. Regarding the removal of the prohibited waste from the aircraft, control over food scavenger operations by aircraft cleaning personnel presents an additional problem. Consumption of the food by the workers has on several occasions resulted in illness which, based on symptoms, indicated gastro-enteric disturbances.

Constant use of load-in and load-out doors in flight kitchen operations present fly and other insect problems from day to day the year round. Protection for these openings into the kitchen involves

the use of air blast curtains, so constructed as to produce a minimum velocity of 1500 linear feet per minute at the critical or floor area. Approved construction and operation is in addition to the velocity requirement at the floor, dependent on no appreciable wave in the curtain, from the discharge nozzle to the floor area, for the width of the opening being protected. It is important that the blower installation be on the outside of the door, so as not to generate food odors in the discharge process that would attract flies or other insects.

#### AIRCRAFT SERVICING AREA SANITATION

Aircraft servicing area sanitation can be defined for our discussion as: (a) control of drinking water, (b) handling and disposal of aircraft toilet water, and (c) handling and disposal of aircraft refuse. Servicing area problems are many fold. Since they involve the boarding of potable water and the removal of toilet waste, this area of sanitation can result in a dilemma to the sanitarian. Control over drinking water involves the piping system, hydrants, water hose, water trucks and carts, as well as their appurtenances, and the transferral of the water to the aircraft.

Problem wise, cross connections resulting in contamination of the municipal water supply can result from non-permitted uses of the drinking water hydrants. The prohibited uses would include the filling of the rinse compartment on soil trucks. The filling of water tanks on scrubmobiles, servicing an aircraft waste connection with a drinking water hose, by employing the use of a nozzle adapter, and by using a drinking water hose to clean certain other aircraft servicing equipment.

Contamination of the aircraft water supply can result from cracked or checked hoses, hose nozzles not protected in transit or in storage, the possible use of nozzle adapters to permit drinking water truck hose connections to aircraft waste connections, towing the soil cart in conjunction with the drinking water cart, and by personnel who are engaged in the handling and removal of aircraft toilet waste being permitted to engage in drinking water servicing operations or to be in contact with the galley or galley equipment.

In the handling and disposal of aircraft toilet waste, three types of toilets are involved, each presenting its own problem. Two of these three type toilets are known in principle as chemical toilets. One a fixed system, and the other involving the use of a portable soil bucket which must be removed from the aircraft for emptying, cleaning, and re-servicing. The fixed system is serviced by the soil truck or soil cart, through the use of a flexible sleeve,

from the soil cart sewage compartment to the aircraft waste discharge chute. The third type toilet is a Wickland flush toilet, and is in use on all pure jets. It is 55 gallons in liquid capacity with one tank forward, and one aft. It is designed to grind and filter waste received from the commodes. The effluent is recirculated for flushing under pressure. It employs the use of a flipper in the neck of the commodes which depresses when the toilet is flushed. This toilet is also serviced by use of the soil truck or soil cart, by a direct connection of the soil vehicle flexible sleeve, to the aircraft waste discharge chute.

The servicing of any type aircraft toilet can and does result in contamination of the ramp by spillage.

In servicing the portable soil bucket, aircraft or ramp contamination can result from spillage by careless handling, failure to cover the bucket after removal and during transportation to the sewage disposal area.

In servicing the fixed chemical toilet, spillage will occur from a defective discharge valve on the aircraft, a leaky soil truck flexible sleeve, or a defective soil truck discharge valve. In some instances, soil truck operators, in emptying and cleaning out the vehicle, forget to close the discharge valve and are not aware of it until they service the first aircraft.

In servicing the Wickland flush toilet, spillage could occur under the same conditions as those mentioned in connection with the fixed chemical system, with the exception that this type toilet employs the use of a wye-plug in the discharge chute which must be locked in place by the use of an instrument in the wye adapter coupling.

Poor cleaning maintenance and storage of soil truck discharge sleeves, as well as poor cleaning maintenance of soil truck discharge valves, both result in fly and odor problems.

In the handling of aircraft refuse, direct disposal from galley waste receptacles to ground storage receptacles is most desirable. Transfer on the aircraft results in spillage of liquids on the galley floor, and contributes to littering the ramps. Air sickness bags should be disposed of by incineration or in triturator rooms.

Galley waste receptacles should be cleaned thoroughly after emptying. They present a problem in the respect they contain much liquid wastes and become highly odorous. Many aircraft servicing areas do not have approved facilities for this type of cleaning. This may result in the receptacles being washed out at aircraft drinking water hydrants, and the resulting waste dumped on the ramp, or in the refuse storage containers. The receptacles may even be washed after emptying in the sewage dis-

posal area which is worse than no washing and being returned to the galley dirty.

As a safety factor in ramp areas accommodating jet aircraft, type and location of garbage and/or refuse storage containers must be taken into consideration. This is essential because blasts from jet taxi operations have resulted in 55-gallon refuse drums being blown into plate glass and in cubic yard roll-away storage containers being rolled into other equipment or other aircraft, all resulting in extensive damage. Finally, all garbage and refuse storage containers must be fly tight and leakproof, and under no circumstances should open trash vehicles be permitted in aircraft servicing areas.

#### AIRCRAFT SANITATION

Problems in aircraft sanitation on a local level are limited to galley cleaning maintenance, toilet room cleaning, vermin infestation and routine water bacteriologic sampling of aircraft fixed drinking water systems, and caterer's constant temperature canisters. Of the above named aircraft sanitation functions, the most troublesome is control of roaches. Here, we mention again, Dade County's sub-tropical weather and the numerous foreign aircraft arrivals which combine to magnify the problem. It is further aggravated, because aircraft construction is conducive to harboring and breeding, and poor galley cleaning maintenance supplies the balance of a roach's needs for a comfortable existence.

Many airlines perform their own extermination services during routine hangar servicing checks. Other airlines employ the services of a professional exterminator only when the situation gets out of hand. One airline in particular, a major domestic carrier, employs a professional exterminating company on a contract basis throughout their entire system, and the airplanes are routinely exterminated while on the ramp.

#### INDUSTRIAL HYGIENE SANITATION

Industrial hygiene sanitation has a prominent place in the Miami International sanitation program, because of the many aircraft companies with overhaul bases on the airport, and the many major engine overhaul companies operating on the field. The approach to the resulting problems are educational in nature, as the difficulties that arise are not as much from a lack of safe equipment, safety programs, or protective devices for the worker, as they are the failure of the worker to exercise the necessary care in the safe operation of the equipment and the use of needed protective devices for the job being done. A few specific hazards are as follows:

1. Ear damage from jet and piston operations on

the ramp in servicing, starting, and taxi operations. The same noise hazard in jet and piston engine test cells.

2. Inhalation of paint booth fumes, particularly zinc chromates which are more hazardous than others.

3. Inhalation of fumes from chrome in plating operations, and acid burns.

4. Inhalation or skin absorption of perchlorethylene or trichlorethylene, used in degreasing operations with possible liver damage resulting.

5. Fiberglass handling resulting in dermatitis.

6. Inhalation of fiberglass solvents such as styrene, acetone, methylethylketone, and of fiberglass dust in grinding operations for finishing.

7. Lead poisoning from tetraethyl lead in high octane gas from the cleaning of wing tanks.

8. Eye damage in drip stick operations for removing fuel from wing tanks for specific gravity tests and water determinations in fuel. Eye burns from testing to locate leaks of the hydraulic systems of the aircraft go area.

Because of the high concentration of jet take-off and landings at Miami International Airport, augmented by jet transitional flights, and with even more to come as airlines strive for complete jet operation, the Dade County Health Department, through the State Board of Health, requested the U. S. Public Health Service to conduct a noise survey of the Miami International complex. In June of 1962, such a study was conducted by the Research and Technical Services Branch, Division of Occupational Health, Public Health Service, Cincinnati, Ohio (1). Their recommendations to eliminate possible health hazards resulting from noise conditions, incidental to the airport operation, are under study at this time by the Port Authority and airline companies concerned.

#### INDUSTRIAL WASTE DISPOSAL

Industrial waste disposal from airline operations and related airline industries on the airport is at this time the most pressing problem. It has resulted in stream and river pollution and through possible ground water contamination, poses a threat to the Municipal water supply.

The airport has open drainage channels that carry storm water to the Miami River and its tributaries. The drainage channels are grossly polluted by mixed airplane maintenance industrial waste. Without attempting to place responsibility for the present condition, several factors have resulted in the situation getting out of hand. The rapid growth of the airport is a prime factor.

The polluting wastes are quite variable, but the

two principally offensive components are (a) oils and greases, both free and emulsified, and (b) phenolic compounds, principally cresylic acid and its chemical relatives. Existing facilities, hopefully provided in the past for interception of oily waste from overhaul and wash areas, are inadequate.

Major sources of oil pollution are shop waste drains in overhaul and maintenance hangars, and various terminal ramp areas and aircraft washing pads. Oily waste water from maintenance and wash areas have been found to contain free oils, oily sludges, dead paint, various acids and alkalies, phenolic compounds (mostly cresylic acid), various hydrocarbons, and other organic solvents, such as kerosene, mineral spirits, occasional ketones, terpenes, wetting agents and emulsifiers (2). Correction of this problem has been under study by various engineering firms for the past two years. These studies have resulted in recommendations that pre-treatment of this waste be given at the various sources and consist essentially of sedimentation-flotation systems, (to remove hydrocarbon solvents and greases) and cyanide destruction systems. Treatment for chrome and other metal salts would result in some reduction of these contaminants as an incidental benefit from the limited treatment proposed. Such wastes could then be received into the Miami Sewage treatment system (3).

The Dade County Port Authority has budgeted \$500,000 for the off-site treatment. It will require installing of 15,000 feet of line from the present Port Authority trickling filter plant at the airport, to the Miami interceptor system. Several stream and railroad crossings will be required and there will be a sub-aqueous crossing under the Miami River. At the present time, opposition to pre-treatment at the source on the basis of cost, by the offending industrial establishments, may result in litigation and retard Port Authority progress in bringing this problem to a satisfactory conclusion.

#### INSECT AND RODENT CONTROL

Insect and Rodent Control at Miami International Airport involves the cooperation of the Dade County Department of Health and several federal governmental agencies, who have the sole responsibility to prevent the aircraft dissemination of disease vectors and pests of medical or agricultural importance. These agencies are the Quarantine Division of the U. S. Public Health Service, the Animal Inspection and Quarantine Division of the U. S. Department of Agriculture and their Plant Quarantine Division. At airports where the hazard of introducing disease carrying insects exists, such as Miami International, it is the policy of the United States Public Health

Service to conduct "entomological surveillance" of the airport area. This surveillance consists of periodic entomological surveys carried on by entomologists or trained representatives for the purpose of early detection and prompt eradication of any insect which unknowingly may have been introduced by aircraft (5).

Since foreign quarantine regulations define an airport area for eradication of mosquitoes, as in addition to the perimeter of the airport, an area of 400 meters around that perimeter, cooperation with the Public Health Service by the Dade County Health Department in elimination of breeding areas, has been most beneficial because rigid local mosquito breeding laws can be more quickly placed into effect.

The operation of the Port Authority Animal Quarantine Station is under the direction of a Federal Department of Agriculture Veterinarian, and here again, cooperation by the airport sanitarian results in sanitary control over disposal of animal wastes, and of flies and rodents. A permanent rodent baiting station is set up in this area, and is serviced by the rodent control section of the local health department.

Cooperation with the Plant Quarantine Division of the Federal Department of Agriculture, by the airport sanitarian has been demonstrated earlier in this discussion in the reference to prohibited agriculture waste.

Rodent control in the terminal and on tenant property is done by professional exterminating companies.

#### TERMINAL SANITATION

The terminal sanitation phase of the program exercises sanitary control over the public areas of the terminal, such as the rest rooms, the concourses, the loading piers, the hotel, the taxi-cab pool, public and employee parking lots, retail establishments including all food and drink establishments in the terminal and on the field, and the 225 food and drink vending devices on the airport.

Most of the eating establishments operate around the clock. Problem wise, they present little more difficulty than that encountered in any other eating establishment. An exception or two would be some operational deficiencies resulting from the tremendous turnover of this type of worker and their lack of stability. Another would involve peak seasonal operations whereby patronage of the food and drink establishments is so heavy that it is difficult to find a time when the least amount of food is exposed in order to carry out heavy duty floor cleaning maintenance.

Rest rooms require constant cleaning and plumbing maintenance. The use of rest rooms by international passengers, strange to American customs in the use of such facilities, results in many sanitary nuisances. Rest rooms in addition to their intended purpose are used for taking sponge baths, as beauty parlors, barber shops, shoe shine parlors, repair shops, clothes alterations and card rooms. Anything not welded to the floor, wall or ceiling may be stolen. The use of single service paper towels, while highly desirable, had to be discontinued shortly after the terminal opening. They were used as commode seat covers, discarded on the floor or in commodes, and carried off the premises by either design or necessity. Now and then, even roller towels are cut and the pieces used for wash cloths, handkerchiefs and shoe shine cloths.

Littering of the terminal floor area in concourse and loading piers has been solved by continued maid and porter cleaning patrols. Maids service trash and cigarette urns and porters do floor trash pick-up, with parlor brooms and long handled dust pans. They are trained to annoy the litterbug and make him uncomfortable. If a person reading a paper, for instance, is observed dropping cigarette ashes on the floor, the porter will move in and sweep up. This has had the tendency to make people think twice before they litter a clean floor and has saved the Port Authority thousands of dollars in heavy duty floor maintenance. It might be mentioned here that the terminal cleaning contractor has the responsibility of floor cleaning maintenance to the tune of 4,547,671 square feet, which includes the public parking lot.

Dogs present a problem in the soiling of floor areas, and while Port Authority regulations prohibit them in the terminal, Terminal Supervisors have a difficult time distinguishing between the tourist dog and the local vagrant.

Vending machines on the field and in the terminal dispense hot and cold meals, hot and cold sandwiches, hot and cold beverages, pastries, ice cream, milk and mixed drinks, candies and nuts. They present no real sanitation problem. Dates of cleaning maintenance are posted on cards inside of the machine. Servicing of the machines is done by three shifts on a 24-hour basis.

Vending transportation vehicles have refrigeration and heating units, and similar temperature holding equipment is in use in storage facilities at the terminal. Refunds are made at a central location in the terminal without question. This policy is not abused and prevents vandalism of the machines by irate customers who might have otherwise lost their money because of a malfunction of the vending device. Anytime a machine is reported out of order, a vend-

ing machine serviceman is summoned through the public address system.

Time does not permit a thorough airing of all of the problems encountered in an airport program. Neither will time permit relating all the accomplishments that result from such a program. The great satisfaction a sanitarian experiences from his endeavors in this field can be attributed to the fact that in working with the airline industry, he is working with an industry second to none in meeting maximum sanitation standards. We know of no other industry that expends more of its time and money, and on its own initiative, provides better ways and means to insure the health, safety, and welfare of the traveling public.

There are tremendous opportunities for sanitarians in airport sanitation programs. Inspection in the field by U. S. Public Health personnel is nominal. The nation wide scope of such a program on their part is prevented by lack of personnel and sufficient financial appropriations. Sanitary observations at some airports would leave you wondering who is in charge. However, without public health service cooperation through your regional office, such a program will never leave the ground.

The legal authority for conducting that area of an airport sanitation program dealing with interstate and foreign quarantine regulations, as they apply to catering points and airline servicing areas, is vested in the Surgeon General of the United States Public Health Service. He, in turn, delegates this authority to representatives of the State Health Departments, and depends on their recommendations in determining the acceptability of a given catering point or servicing area.

If you plan conducting an airport sanitation program, keep in mind that the airline industry, business wise, are tough people to deal with. It is important that you sell yourself first. If you can prove to them that you know what you are talking about, earn their confidence, express a genuine interest in their problems, prove that you have a better or more economical solution to their problems, and if in addition to being accepted in an administrative capacity, you find you are in demand as a consultant, you will then have a sense of pride in being associated with the most progressive industry in the nation.

We are in the Jet Age. Travel wise, that means newer planes, more speed, and more people. In the administration of any public health program, accomplishments can be measured by the number of people you have helped. If your locality has the possibility of supporting an Airport Sanitation program, and you are not active in this area of sanitation, investigation could be enlightening as to the number of people you are neglecting.



Whatever degree of success the Miami International Sanitation program has attained, can be attributed to the cooperation the Dade County Health Department has received from industry in general, the Dade County Port Authority, the Region IV Office of the U. S. Public Health Service, the Airline Transport Association, and to the excellent working relationship existing between the County and State Health Officers.

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## NATIONAL SURVEY OF SANITARIANS

### A PRELIMINARY REPORT<sup>1,2</sup>

ISRAEL LIGHT AND FRANK A. BUTRICO

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*U. S. Department of Health, Education, and Welfare*

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We are very grateful for this opportunity to share with you some initial data and critical observations from the first national survey of sanitarians. This project was undertaken by the U. S. Public Health Service with the initial cooperation of the three national sanitarian societies.

Please remember that at this time we are doing little more than opening the door and peeking into the pile of data and series of tables, all of which will be published within a reasonable time as a formal document by the Public Health Service. This will be issued with a maximum of explanation and a minimum of interpretation for the very good reason that the results and implications of the data will mean one thing to the sanitarian, may mean something else to the employer of sanitarians, and could mean still something else to the educator of sanitarians.

We wish to pay open and full respects to the presidents and executive secretaries of the three national sanitarian societies who were with us from the beginning and who rendered every possible assistance to the successful conduct of this project. We

personally and the Public Health Service professionally are indebted to them for their complete support. We feel ethically bound to report the names of the three key people—"Red" Thomasson of your own group, Nick Pohlit of the National Association of Sanitarians, and Hardy Watson of the National Association of Professional Sanitarians.

To begin with, you all know that no definition of a sanitarian was applied in this project. Anyone who claimed himself or herself to be one was welcome to be included, if the survey form was filled out and returned. Well, then, how did we locate you? Our office started off with national sanitarian society membership lists. Then we wrote to State, county, and local departments of health. Then we added State departments of agriculture. An original list of more than 20,000 names was shaken down to approximately 16,000. A number of you were not shaken down sufficiently, and so you received two or even three forms.

I will digress for a moment at this point long enough to give you one example of the headaches involved in a national survey. We began a random spot check of some of the first returned forms. Upon matching some salaries with society membership, we noted that many sanitarians with unfortunately low salaries were apparently watching every penny, yet wished to affiliate with their colleagues, and therefore joined their State group rather than a national group. So we scrambled madly to get

<sup>1</sup>A project undertaken by the Office of Resource Development, Public Health Service, to obtain information relative to the training, utilization, description of activities and compensation of sanitarians in the United States.

<sup>2</sup>Presented at the 49th Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., in Philadelphia, Pa., October 24-27, 1962.