

The SANEPID Service in the U.S.S.R.

The Sanitary Epidemiological (SANEPID) Service of the Soviet Union is a network of public health centers responsible for surveillance and control of potentially preventable diseases

ROGER I. GLASS, MD, MPH

PREVENTION OF DISEASE receives major emphasis in the health care system of the Soviet Union. From the period of the revolution, when epidemic infections were the scourge of the Russian people and the main health problem of the new Government, to the present time, when rapid industrialization has introduced new problems in occupational disease and environmental health, the Soviet hygienist has commanded a central role in planning health care. The Soviet health system is committed to infectious disease control, environmental health, and child and adolescent care. Central to this practice of preventive medicine is the Sanitary Epidemiological (SANEPID) Service (1), a network of public health centers in nearly every district of the country with the responsibility for surveillance and control of all potentially preventable diseases.

The U.S.-U.S.S.R. Health Agreement for Cooperative Research in Environmental Health gave me the opportunity to visit the Soviet Union from October 1973 to February 1974, under the auspices of the Soviet Ministry of Health and the Sysin Institute of Hygiene. One objective of this visit was to study the system of SANEPID stations responsible for the community practice of preventive medicine and environmental health.

History of the SANEPID Service

Prerevolution, 1870-1917. Soviet interest in preventive medicine has its roots in the great epidemics rampant in Russia in the second half of the 19th century. Cholera, typhus, smallpox, dysentery, malaria, and other infectious diseases were recurrent, affecting millions of Russians, and measures to deal with them were ineffective. Russian social hygienists, the founders of the Russian public health movement, emerged to combat these epidemics. They combined an interest in medical statistics and infectious disease epidemiology with an understanding of the new science of bacteriology and were responsible for organizing diagnostic laboratories, form-

ing societies for epidemiology and social hygiene, founding new journals, writing texts, and establishing centers of academic excellence to train special sanitary or public health physicians.

This group of Russian hygienists, Erisman, Botkin, Molleson, and others, established a philosophy of public health that was grasped by the leaders of the revolution and still persists. Infectious diseases were considered social diseases. They were diseases which related man to his living environment, and therefore they were diseases preferentially affecting the lower strata of society (2a). Erisman believed that the physician must not only treat the sick—he must also prevent illness, thereby fulfilling the most beneficial, if not ideal, facet of his calling (2b).

Within this philosophy of social hygiene, the first SANEPID stations were created in the late 1800s. Aimed at combating infectious disease outbreaks, the role of the SANEPID station was to study those conditions in the environment which affected the lives and health of man and to aid in their amelioration.

The revolution and after. The period following the revolution saw the country again blighted by severe epidemics. In 1913, one in four children died in the first year of life, and 43 percent died before age 5 (2c). The

□ *Dr. Glass spent 4 months in the Soviet Union as a participant in the U.S.-U.S.S.R. Health Agreement for Cooperative Research in Environmental Health. Dr. David P. Rall, director, National Institute of Environmental Health Sciences; Dr. G. I. Sidorenko, director, Sysin Institute of General and Communal Hygiene, Moscow; and Dr. P. N. Burgasov, Deputy Minister of Health, U.S.S.R., were coordinators of the joint program in environmental health.*

Tearsheet requests to Roger I. Glass, MD, Department of Medicine, Mount Sinai Hospital, Fifth Ave. and 100th St., New York, N.Y. 10029.

lifespan in the European sector of Russia was among the shortest in Europe. Malaria, dysentery, smallpox, cholera, trachoma, and many other infectious diseases accounted for a large amount of the morbidity and mortality (2*d*). The single most devastating illness, however, was typhus, which in its various forms afflicted more than 6.5 million people in the 3-year period 1918–20. Lenin is reported to have commented that “if socialism cannot conquer the lice, then lice will conquer socialism” (3).

The national organization and mission of SANEPID stations were outlined in a 1924 article by N. A. Semashko, Lenin’s advisor on health (4). The new Soviet Government had to take various anti-epidemic measures to protect the health of the population, and these preventive functions were centralized in the SANEPID stations. These stations were not only to gather and analyze data, but also to take an active role in organizing, implementing, and enforcing plans for the prevention of infectious diseases. Campaigns for mass obligatory vaccination, sanitary protection of water supplies, hygienic disposal of waste and sewage, malaria surveillance, and pasteurization of milk were included in the activities of the young SANEPID Service. The stations had no clinical contact with patients. They administered programs such as vaccination through the local polyclinic or school physician. By 1941, about 1,760 SANEPID stations were fulfilling these anti-epidemic functions.

The scientific base for the work of the SANEPID stations came from research performed in specialized institutes of epidemiology, infectious diseases, and environmental health. Research was directed to solving the most immediate health problems, and research results were rapidly translated into standards or guidelines for the practicing public health physicians in the SANEPID stations. The preparation of vaccines, elaboration of water purity standards, and perfection of new pasteurization methods are representative of the kinds of research undertaken. In the medical schools, special faculties were established to train sanitary physicians to carry on research and to staff the expanding network of SANEPID stations.

By World War II, the principles of preventive medical activities were well established in practice. The SANEPID stations had become the centers for preventive practice and were responsible for both infectious disease surveillance and the execution of control measures at local and regional levels. A network of research institutes were engaged in problem solving in the direct service of the SANEPID stations, and faculties had been organized for training specialists—sanitary physicians—in preventive medicine.

Post-World War II. By 1950, the morbidity pattern of the Russian people had changed, as in the rest of Europe and the industrialized world. Principally, control of epidemic infectious diseases had increased the lifespan and decreased infant mortality. Many hygienists

questioned the need to continue the SANEPID stations’ surveillance for infectious diseases in light of the decreasing importance of these illnesses. Socialism had conquered the lice and should now move on to new areas of prevention.

The Soviet Union had been devastated by World War II, with the loss of some 20 million people and destruction of much of its industry and housing in the European sectors. The hygienist’s role, broadly interpreted, was to deal with the interaction of man and his environment, and in the postwar period of reconstruction when this environment was to change so radically, the input of the hygienist was deemed crucial.

Considerations of urban planning, such as the establishment of “sanitary protective zones” to buffer the population from the pollution effects of new industries, the location of appropriate building sites for new residences and industry, the determination of the optimum conditions of the microclimate of new apartments (temperature, size, air content, ventilation, noise), the elaboration of safety standards for environmental pollutants, were brought into the domain of the sanitary hygienist. The push for rapid industrialization challenged the ability of physicians in occupational health to elaborate standards for safe levels of chemical exposure in the workplace (5) and to survey the working population for evidence of occupational illness.

The assault on the environment by manmade constructions and elements led to a major shift in the activities of the SANEPID Service and the sanitary physician. This physician, as an active member of the community council, now was called upon to render judgments on the health aspects of all new projects in industry and urban housing. In addition, as new standards were instituted, he had to survey his district for violations of the new standards and, if they existed, actively work toward their correction. The sanitary physician thus became an environmentalist, an occupational hygienist, and an urban health consultant, in addition to his earlier principal role in the control of infectious diseases.

In the early postwar years, environmental considerations were often overlooked for expediency in the reconstruction of a devastated country. By the late 1960s, the embarrassing publicity given to the pollution of Lake Baikal (the largest body of fresh water in the world, containing unique flora and fauna) and the Moscow River, the plight of the sturgeon and the scarcity of caviar, and similar incidents indicated that while the sanitary physician might have had some input into the planning process, he was not always able to voice his environmental and health concerns during this period of reconstruction (6*a*). New legislation and funding in environmental controls and the newly articulated interest and posture toward environmental health have, since the late 1960s, strengthened the hand of the local sanitary physician and the SANEPID Service.

Organization of the Service

The SANEPID Service presently operates more than 4,800 stations throughout the Soviet Union (7), which employ more than 37,461 physicians and 30,000 medical specialists and paramedical workers (2e). These stations parallel the geopolitical divisions of the country—republics, oblasts (regions), cities, and rayons (districts of approximately 150,000–300,000). The sanitary physician at each geopolitical level is the chief health officer and is responsible for all preventive activities of his district, city, or oblast (7). The district SANEPID physician can seek help and advice from the larger and more specialized staff at the city, regional, or republic level and ultimately from the chief health officer for the country, the Deputy Minister of Health. The Deputy Minister is responsible for the operation of the many SANEPID stations as well as the many research institutes associated with the SANEPID Service (8).

The research of the SANEPID Service is carried out in a small number of large, well-known institutes, for example, the A. N. Sysin Institute of General and Communal Hygiene and the Institute of Industrial Hygiene and Occupational Medicine, as well as a large number of smaller regional institutes and the many departments in medical schools that deal with preventive medicine. Research is centrally planned and financed and is aimed principally at problem solving. Theoretical research includes activities such as setting standards for new pollutants in the environment or the workplace or developing new methods to monitor pollutants. Practical research deals with the resolution of specific problems, often those of an individual SANEPID station; for example, assessing the "healthfulness" in the design of a new factory or, on completion, testing the factory's effluents. This direct connection between the research institutes and the SANEPID stations is important; the research results can be put into practice by the sanitary physicians, and local problems can be referred for consultation to the research institutes. All the major research institutes have an academic tie to the Soviet Academy of Medical Science, which permits them to grant higher degrees to graduate students.

Manpower for the SANEPID stations includes sanitary physicians (public health physicians), workers with specialized training in health fields (for example, epidemiologists, bacteriologists, or sanitary hygienists), and workers with less than the full medical training of the physicians (paramedics or feldshers). Although some sanitary physicians are graduates of a traditional medical school with postgraduate training in public health, many are graduates of 1 of the 11 special medical schools for training physicians in public health (9). These schools offer a curriculum similar to that of the traditional medical school for the 3 preclinical years, but mix in a considerable amount of public

health and epidemiology in the last 3 clinical years. The last year includes an internship of 3 to 4 months at a SANEPID station, a health post in industry, or some other equivalent experience in the practice of preventive medicine.

Activities of a District Station

The district SANEPID station is the basic unit for local surveillance and control of preventable diseases throughout the Soviet Union. Its functions are determined by the needs of the geographic region it serves. Of the 4,800 district stations, 3,000 are in rural areas. These rural stations typically serve a population of less than 150,000, and the sanitary physicians may take a special interest in such local problems as the use of agricultural chemicals, pesticide residues in runoff water, or the hygiene of agricultural products.

Urban SANEPID stations may serve a population of as many as 500,000 and have a larger and more specialized staff (see table). Their specific interests include the monitoring and control of air pollution and occupational disease, as well as the health evaluation of land use and of new construction in industry, housing, or transportation (10).

All the district stations, regardless of size or location, monitor infectious diseases, child and adolescent health, food and water purity, and the specific occupational and environmental problems in their regions. In its district, the SANEPID station plays an important role as the center for collection of data on prevention of diseases and as the principal health consultant for new projects.

The chief district sanitary physician is both the director of the local SANEPID station and the representative for health on the municipal governing council (11). He has four main powers: to plan, to approve, to monitor and enforce, and to overlook violations, and he uses these powers when he participates in decision making. Since there is no private enterprise, urban planning and new construction are carried out under the auspices of the local government, and in theory no project begins without the expressed approval of the sanitary physician. With the help of his technical and professional colleagues, he must evaluate questions such as whether pollution controls in a new factory or ventilation facilities for the workplace are adequate to meet the rigid health standards, or whether a new apartment complex will have adequate schools, child day-care facilities, public transportation, food stores, and recreation spots in the immediate vicinity or whether it has been planned to meet the noise standard for residential areas and is sufficiently distant from polluting industries to insure clean air! In a country where everything is centrally planned, the power to sit on the planning board to take part in the decision-making processes is considerable.

Once a new building or industry has been constructed, the sanitary physician must certify that it is

Structure of a SANEPID station for an urban industrial district (250,000 population)

<i>Office</i>	<i>Personnel¹</i>	<i>Mission</i>
Director's office	Chief sanitary physician	Director of station; public health consultant for the district
Departments:		
Industrial health	2 physicians	Survey of working areas; enforcement of maximal acceptable concentrations of chemicals in the workplace
Food hygiene	2 physicians; 3 paramedics	Sanitary inspection of all foodstuffs sold in local markets or produced in the district for both biological and chemical impurities
Environmental health	2 physicians; 3 paramedics	Survey of pollutant levels in air, water, and soil; enforcement of legal norms; evaluation of new plans for housing and industry
Sanitary hygiene and child and adolescent health	1 specialist; 2 paramedics	Infectious disease control and health surveys of children in schools and day-care centers
Laboratories:		
Foodstuffs	1 specialist	
Industrial toxicology	2 specialists; 3 paramedics	
Air and water pollution	3 specialists	
Epidemiology (infectious diseases)	4 specialists; 12 paramedics	
Bacteriology	3 specialists; 6 paramedics	
Parasitology	1 specialist	

¹ Total 51: 7 physicians, 15 specialists, and 29 paramedics.

in fact safe for human occupation and that it will not damage the local environment. Pollution control equipment must meet specifications, noise and pollution levels must be measured and compared with existing standards, and apartments must conform to the criteria for new housing that have been established in the research institutes (microclimate, air, noise, heating levels, and the like).

It is often easier to change the direction of new projects than to correct existing environmental violations. The power to monitor environmental pollution or occupational hazards and enforce changes is therefore often the most taxing task for the chief sanitary physician (6b). Many standards for environmental pollutants are strict, since the hygienic norms are based entirely on toxicological research without consideration of available control technology or economic cost (12). Consequently, standards often serve more as a direction for change and enforcement than as an absolute limit to be attained.

The power of the sanitary physician to overlook violations of health standards is critical because it allows for the practical compromise of a rigid and all-inclusive set of health standards which may be economically or technically unattainable at present or even in the future. Carbon monoxide and noise standards, for example, are difficult to enforce in central city areas and will remain in violation for years to come. Older polluting industries may be phased out rather than expensively converted and cleaned, and in the interim their health hazards will be overlooked. The sanitary physician in an urban area can relegate

solutions for these to the indefinite future and avoid unnecessary confrontations.

Discussion and Evaluation

In the Soviet health care system, major emphasis is placed on preventive medicine. The day-to-day problems of preventive medicine are dealt with by the SANEPID stations in almost every district of the U.S.S.R. These stations were first concerned with infectious disease control but later became interested in the hygiene of food, the working population, and most recently the manmade environment. The SANEPID Service is separate from the curative branches of the medical care system and has at its disposition approximately 10 percent of the medical manpower and medical budget of the country.

The SANEPID stations have a unique role in the practice of preventive medicine. They collect and analyze data on a wide variety of preventable diseases and participate in the control of the existing hazards. The chief sanitary officer of a district exercises broad powers in urban planning, in monitoring of pollutants, and in enforcing environmental standards. In other words, the SANEPID station offers a continuing input of health considerations on every community problem. For example, the sanitary physician can encourage creation of new parks and recreation lands, can discourage industry from locating in a housing area, and can force a major polluter to correct any infringement of the environmental standards or be threatened with closing down.

A critical evaluation of the success of the SANEPID

system in fulfilling its goals would be purely speculative since few public health data are available to the Western observer, and what are available may not be entirely accurate. Goldman's documentation of many violations of environmental standards, such as the polluting of Lake Baikal (6), led the Soviets to discontinue the reporting of pollution in the early 1970s. Repeated documentation of outbreaks of giardiasis among Western travelers to Leningrad have been denied by Soviet health officials. These situations indicate that the SANEPID Service has substantial difficulty in attaining its broadly stated objectives.

In cross-cultural perspective, several significant observations become apparent. For one, the sanitary physician and the SANEPID station provide a model for the comprehensive practice of preventive medicine that has proved effective in the Soviet context. By separating preventive medicine, both in research and in practice, from the curative branches—financially, administratively, and in the training of personnel—the Soviets have secured an independent status for preventive medicine and the public health physician. Their experience may give us some guidance in offering more substantial support to the tasks of preventive medicine in the United States, as well as providing interesting contrasts in the funding of public health and training of physicians in preventive medicine. Indeed, independent allocations in our research budgets for comprehensive study of risk factors in such illnesses as heart disease might insure that expenditures are not disproportionately absorbed in the advancement of surgical cure. The separate training of public health physicians in the Soviet Union insures adequate manpower in preventive medicine, without confounding the student with the individualistic outlook and the reward-and-incentive system of the clinician. The Soviet public health physician is not a frustrated clinician. He is the product of a unique institute of public health, and he commands broad knowledge of preventive medicine in a system in which this is historically valued.

Second, the combination of many areas of preventive practice in the district SANEPID station strengthens the practice of preventive medicine at the local level. The SANEPID station unites the functions of the local public health office with some of the functions performed in the United States by agencies such as the Environmental Protection Agency (pollution control), the Food and Drug Administration (food hygiene), the Occupational Safety and Health Administration (occupational disease surveillance), and the Bureau of Epidemiology of the Center for Disease Control (infectious disease control). In so doing, it has set off a broad sphere of public health practice which it can influence and enforce at the local level through local government. From this centralization of function has evolved a synergism in the effectiveness of local practice.

Finally, integration of the chief public health officer into the local government assures him the opportunity to advise and consult on all programs involving the health or welfare of his community.

The Soviet Union and the United States have many common problems in public health. As our contacts increase, we will be challenged with some of the research results and practical attainments of the Soviet system. To understand these in the context in which they have been discovered and implemented, acquaintance with the SANEPID system will be essential.

References

1. Marzeev, A. N., and Zhabotinskii: *Kommunal'naya gigiena* [Communal hygiene]. Ed. 3. Medical Publishing House, Moscow, 1968, p. 14.
2. Veber, L. G.: *Organizatsia sanitarno-epidemiologicheskogo dela v S.S.S.R.* [The organization of the Sanitary-Epidemiological Service in the U.S.S.R.]. *Meditcina*, Moscow, 1968, (a) p. 13-49, (b) p. 15, (c) p. 27, (d) p. 32, (e) p. 61.
3. Muller, J. E., et al.: The Soviet health system; aspects of relevance for medicine in the United States. *N Engl J Med* 286: 700 (1972).
4. Akulov, K. I.: *Sanitarno-epidemiologicheskaya sluzhba rossiiskoi federatsii k 50 letno obrazovania S.S.S.R.* [The Sanitary-Epidemiological Service of the Russian Federation on the 50th anniversary of the U.S.S.R.]. *Zdravookhr Ross Fed* 11: 3-7 (1972).
5. Elkins, H. B.: Maximum acceptable concentrations. *Arch Environ Health* 2: 45-49, January 1961.
6. Goldman, M. I.: The spoils of progress; environmental pollution in the Soviet Union. Massachusetts Institute of Technology Press, Cambridge, 1972; (a) pp. 151-177, (b) p. 34.
7. Maistrach, K. V., and Laurova, I. G.: *Osnovi sotsial'noi gigieni i organizatsii zdravoochraneniya* [Fundamentals of social hygiene and the organization of public health]. *Meditcina*, Moscow, 1969, ch. 10.
8. World Health Organization: Air pollution control; Report on an interregional seminar convened by WHO in collaboration with the government of the U.S.S.R. Moscow-Volgograd, Aug. 31-Sept. 20, 1967. Doc EP/6812, II-21.
9. Izmerov, N. F.: Control of air pollution in the U.S.S.R. *Public Health Papers* No. 54. World Health Organization, Geneva, 1973, p. 94.
10. Sokolovski, M. G.: The Moscow city sanitary and epidemiological station. Presented by the Central Institute for Advanced Medical Studies, WHO interregional travelling seminar on air pollution. U.S.S.R. Ministry of Public Health, Moscow, 1967.
11. Aleksandrogo, V. A., and Vichrova, L. P.: *Voprosi sanitarnoi ochrani vneshnei sredi, gigieni truda i profilaktiki zabolevanii* [Questions of the sanitary protection of the environment, industrial hygiene and occupational disease]. Leningrad, PCGMA, Ministry of Health, RSFSR, 1972, pp. 10-12.
12. Magnuson, H. J., et al.: Industrial toxicology in the Soviet Union. *Am Ind Hyg Assoc J* 25: 2, 185 (1964).