Trends in Occupational Health Programs in State and Local Units

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THE YEAR 1959 has been outstanding in the development of occupational health programs in State and local governments. Both the number of units and personnel reached a new high, exceeding for the first time the 1950 peak. Presently, 484 professional personnel staff 76 occupational health units located in 40 States, including Hawaii, the District of Columbia, and Puerto Rico, and in 33 local health departments. Three of the State programs (New York, Massachusetts, and Illinois) are in departments of labor, and the rest are in health departments. The growth pattern, however, has not been uniform. Nor has the personnel rise been commensurate with the increased responsibilities of State and local occupational health agencies. Frequently, additional staff has been largely absorbed by the newer industrial health problems associated with air pollution and radiation.

Personnel

Growth trends are illustrated by a series of charts based on directories of governmental industrial hygiene personnel issued annually since 1942 by the Occupational Health Branch. Figure 1 shows that the growth in the number of personnel in local units has been slow but steady. In 1942 they accounted for 10 percent of total staffs, and in 1959, for 20 percent. Total State and local staffs fluctuated from a low of 247 members in 1942 to a high of 425 in 1950, then dropped to a low of 360 in 1957, and rose sharply to the present new high of 484 persons.

State programs developed most rapidly immediately following the passage of the Social Security Act in 1935, when funds were made available for expansion of public health programs, including industrial hygiene. National defense activities and World War II accelerated the establishment of additional units so that by 1942 there were programs in 36 States and 7 local health departments with a total of 247 professional personnel, including 44 on loan from the Federal Government.

The impetus that led to the 1950 peak in personnel was the designation of Federal grant-in-aid funds for industrial hygiene. Spread over the 3-year period 1947 to 1950, these funds also helped to offset the withdrawal in 1946 of Federal personnel on loan by providing monies for recruitment of trained industrial hygiene personnel being released from military service.

The subsequent discontinuance of earmarked funds and the general decrease in State appropriations resulted in a retrogression in occupational health activity, reflected not only in the loss of personnel but also in the discontinuance of some programs. Part of this decline was also due to the low salary scales then prevailing in government agencies and part to the absorp-

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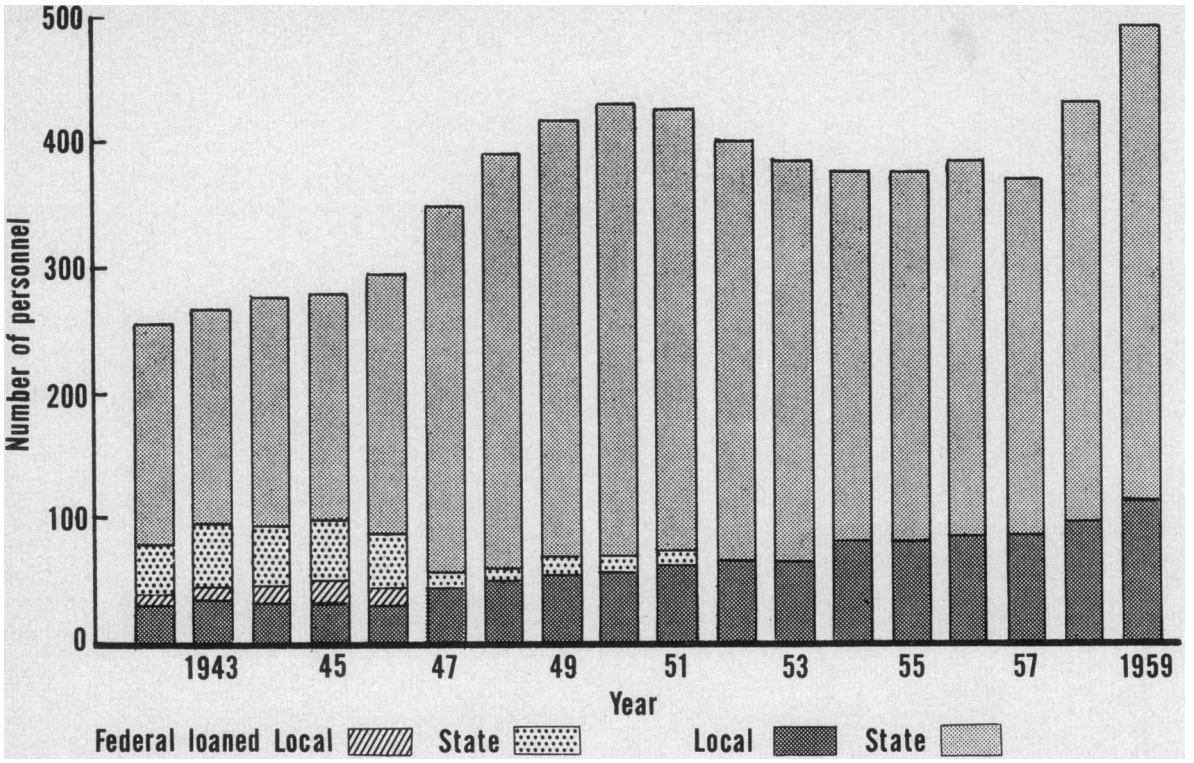
Figure 1. Number of occupational health personnel in State and local units, United States, 1942–59



tion of personnel by industry, the armed services, and other agencies that were beginning to employ industrial hygienists at a rapid rate.

All programs were not affected to the same degree. In some instances, their financial situation was stabilized through the appropriation of State air pollution funds for factfinding studies in which the industrial hygiene units cooperated extensively. Otherwise, the setback would have been more serious. It took 8 years to reach the peak in staffs achieved in 1950, a level which was exceeded only this year.

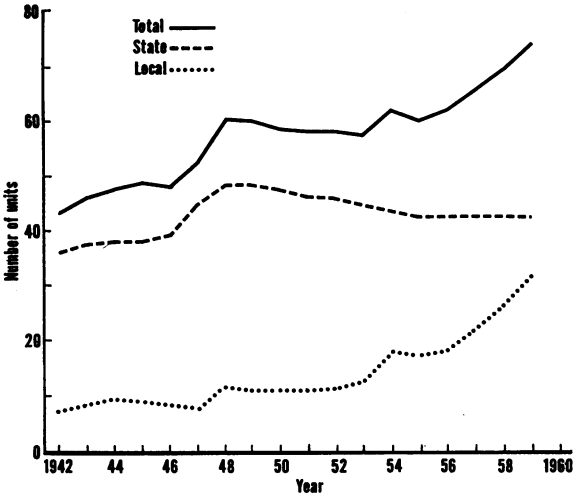
Viewing the long-term growth in staffs, we find that the number of persons in State and local units, exclusive of Federal personnel on loan, has more than doubled since 1942. The growth has been erratic, but the sharp increase from 1957 to 1959 appears indicative of a new upward trend. However, forecasting future growth on the basis of the past is not simple. The fractionation of industrial hygiene programs into specialties, including radiation and air pollution, or the combining of these specialties under one administrative head can readily cause fluctuations in numbers of personnel both at an individual State as well as the national level.

However, a closer look at the nature of the increase from 1957 to 1959 discloses that 22 State and 18 local units, of which 12 are new, have increased their staffs from 1 to 17 persons, or an aggregate of 137 persons. Six State programs account for one-half of the total staff increases during the period.

In contrast, only seven State and three local programs showed a net decline in personnel. The maximum loss in any unit was 2 persons, and the total loss was 13. Twenty-six units now functioning showed no change.

Today's comeback in personnel is actually greater than the gross numbers show. The present counts are based strictly on information received for annual directories of occupational health personnel in government, and are not all inclusive. For example, they exclude industrial hygienists employed by industrial commissions in at least four States. Likewise, certain local health departments providing limited occupational health services may have escaped attention.

Figure 2. Number of occupational health units, United States, 1942–59



Units

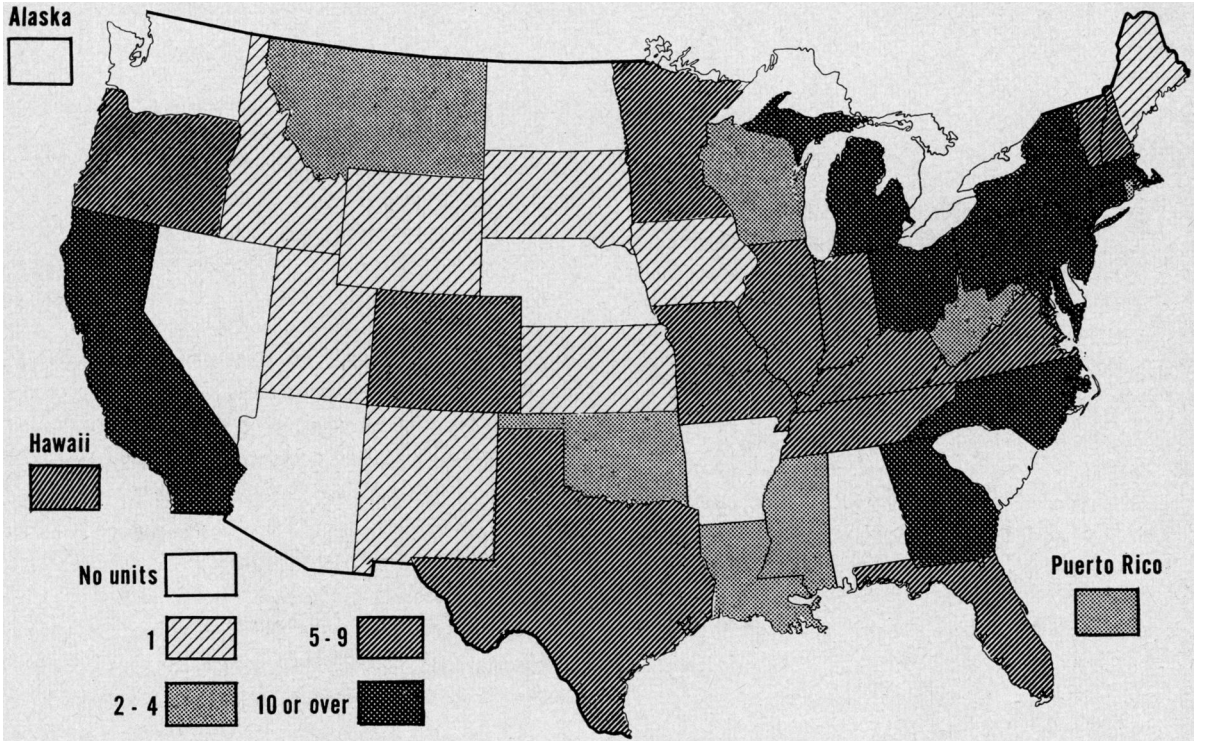
Figure 2 depicts trends in the number of units functioning since 1942. The high point in the number of State units occurred from 1948 to 1950, when all but two States provided occupational health services on at least a limited basis. As a result of loss of funds and postwar reduction in industrial activity, a number of States discontinued programs. Today 10 States including Alaska still do not have occupational health programs in either health or labor departments.

On the other hand, local units have shown a gradual upward trend, especially for the last 10 years. In contrast with 7 units in 4 States in 1942, today 33 units are found in 15 States. The effects of vigorous State efforts to encourage the establishment of local occupational health units are evident in California, which has about one-half of these 33 units. This trend for local health departments to assume responsibility in occupational health is highly promising. Local health departments occupy a strategic position in promoting community health in all its aspects.

Size of Units

Although the number of State units has remained stable during recent years, the number of staff members has been increasing since a low

Figure 3. Number of personnel in State occupational health units, United States, 1959



point in 1954. Significantly, at present only 21 percent of the units employ two to four persons, as compared with 48 percent 3 years ago, and units with five or more persons today represent 58 percent of the total as compared with 40 percent in 1947.

There has been no significant pattern for one-man units, although the total number has increased slightly during the past 3 years. The eight units currently in this category are in States which, generally, are not highly industrialized (fig. 3).

With the exception of California, State units with 10 or more persons are located in the eastern part of the country. Units with five to nine persons are scattered, whereas the units with smaller staffs are concentrated chiefly west of the Mississippi River.

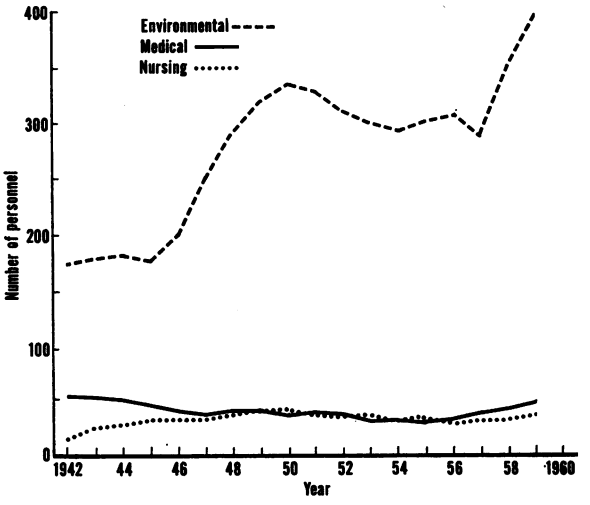
Professional Staffing Patterns

When State and local governments first engaged in occupational health, their primary objectives were improvement of the working environment and elimination of health hazards. Over the years their programs have continued to emphasize environmental studies, with such activities accounting for 70 to 90 percent of all direct services to industry. The need for balanced medical-environmental programs has long been recognized, but their development has been hampered by lack of appropriate personnel and, in some instances, lack of sufficient motivation.

Figure 4 shows clearly the great differential between environmental and medical and nursing personnel. Environmental personnel, consisting of engineers, industrial hygienists, and chemists, accounted for about 70 percent of total staffs during the war years, 1942–46. For the past 10 years, the percentage has hovered about 80.

The present low level of medical personnel in State and local units should not be compared with that during the war period, when about one-half of the physicians were on assignment from the Public Health Service. These units have consistently experienced great difficulty in recruiting and keeping medical personnel. Some gain in industrial nursing consultants was made during the war years. Since then, their number has remained comparatively the same.

Figure 4. Number of environmental, medical, and nursing personnel in State and local occupational health units, United States, 1942–59



Trends in Program Content

To obtain information on program content, a limited survey was conducted among directors of 12 State and 2 local occupational health units. These units, widely scattered geographically, employ from 5 to more than 50 professional personnel, with an average of 11. While they do not necessarily represent an accurate sample of the entire country, their replies are significant.

In discussing changes of program emphasis, 5 of the 14 directors mentioned increased attention to radiation problems, 2 to air pollution, 1 to silicosis studies and research, and 1 to labeling activities. In five units, the change is toward extending direct services to more establishments as well as to more diverse types of industries. Three directors are actively promoting the establishment of occupational health services in local health departments, and one is expanding appreciably its informational and educational activities.

In considering activities requiring more emphasis, seven directors agreed on the need for more comprehensive or improved coverage of industrial establishments. Four directors men-

tioned the necessity for better educational and informational services to industry, and two expressed a need for closer and better working relationships with industry, the medical profession, and other groups on employee health services. The need for more and better trained personnel in local health departments was also mentioned. Only two directors expressed a need for more emphasis on radiation and one, on air pollution, possibly because most of the other units were already involved. Two directors believed their programs are adequately balanced for the present.

The directors' estimates of total staff time spent on different components of their programs showed a remarkable agreement. For example, 12 of the 14 directors estimated that at least 50 percent of total professional staff time is spent on field investigations and services. The range for the 14 units is 33 to 92 percent, with a median of 67 percent.

About 15 percent of the total staff time is devoted to laboratory services and developmental research, 15 percent to teaching and health education activities, and about 2 percent to civil defense. Individual estimates for civil defense range from 1 to 7 percent. Six of the directors reported that employee health services for State employees required from 1 to 25 percent of staff time, giving a median value of 4 percent.

Eleven of the fourteen directors reported at least 70 percent of staff time spent in the field is devoted to investigation of occupational hazards. The range was 33 to 95 percent, with a median of 81 percent. This indicates that most of these units still concentrate their efforts in the traditional areas of industrial hygiene.

Wide variations were found in the percentage of self-initiated and requested field visits. One unit reported that 100 percent of its field work results from requests; another that requests account for only 6 percent of its field services. For all 14 units the median value for self-initiated field visits is 62.5 percent.

In the directors' opinions, dusts and ionizing radiation constitute the leading problem areas of occupational health, with solvents and gases next in order. Also mentioned were inplant health services and noise. The problem areas receiving most attention are ranked in the following table.

Problem area	Rank			
	1st	2d	3d	Total
Dusts	4	2	3	9
Ionizing radiation	5	1	2	8
Solvents	2	3	1	6
Gases	1	2	3	6
Inplant health services	0	2	2	4
Noise	0	1	1	2

Two of the directors of State units would not attempt to separate the promotion of inplant health services from investigations of occupational hazards. They stated that all personnel regularly attempt to promote improved health services whenever they visit industry for any purpose. The others show a range from 1 to 20 percent, with 8 percent being typical, for total field time spent on this activity.

The occupational aspects of radiation have continued to increase in recent years. While they have added to the total burden of the occupational health unit, no attempt has been made to segregate them as separate items in terms of staff time, since they are considered part of the broad program to control hazards associated with the working environment.

Because of the training and experience of staff members, many occupational health units have also been given overall responsibilities for radiation problems, community as well as occupational. Among the units reporting in this limited survey, an average of about 4 percent of field time is being spent on nonoccupational radiation problems. However, wide variations in this figure may be expected, depending on the extent of activity and size of the unit.

For example, 17 occupational health units maintain fallout stations and monitor air and precipitation for radioactive fallout as participants in the Public Health Service radiation surveillance network program. Many of their personnel have gone on temporary active duty with the Public Health Service to monitor fallout in connection with weapons testing in Nevada. Likewise, many of these personnel are working in radiation instrument phases of civil defense courses and in monitoring instruction. In one State 18 man-days were spent 1 year in instruction alone.

In the larger units these additional duties usually do not represent a heavy burden. How-

ever, smaller units are likely to find these activities taking a much greater proportion of their time, and at the expense of routine work. Many units have helped to draft regulations for the control of radiation sources. Preparing these regulations may require as many man-days for South Dakota with its one-man State unit as for Michigan with a staff of more than 20. Similarly, the time requirements for operating a fallout monitoring station are the same, regardless of staff size. As more and more regulations on radiation are passed, the responsibility and workload of these units will be increased, especially in the registration of users of radioactive materials or operators of X-ray equipment.

The reporting units indicated that air pollution work in general accounts for about 5 percent of field time, although one State estimates 25 percent of its time on this activity. Here, too, however, it is difficult to obtain a representative figure. Because of the extensive experience of occupational health agencies with industrial emissions, these units have frequently been given responsibility for community air pollution. The line between the occupational and community aspects of air pollution sometimes blurs, making it difficult to separate the time spent on each. Because so much air pollution activity is interrelated with industrial hygiene, many occupational health units consider it as part of their routine investigations rather than a separate item.

At present responsibility for air pollution control rests primarily with occupational health units, as reflected by the 1958 Directory of Governmental Air Pollution Agencies (*1*). Of the 41 State agencies listed, 30 are in occupational health units and 11 are in other units of departments of health. In New York, the State Division of Industrial Hygiene, Department of Labor, shares the responsibility with the New York State Department of Health, and does the sampling of industrial effluents.

Occupational health units also participate in the Public Health Service's national air sampling network. There are 115 air sampling stations throughout the country, including 19 operated by State and local occupational health units.

Air pollution control is primarily a local problem, with regulatory authority frequently vested in local boards of air pollution control or in smoke abatement agencies, and technical assistance is often provided by local occupational health units. If control authorities are not set up, the burden of handling air pollution problems usually falls on the occupational health unit.

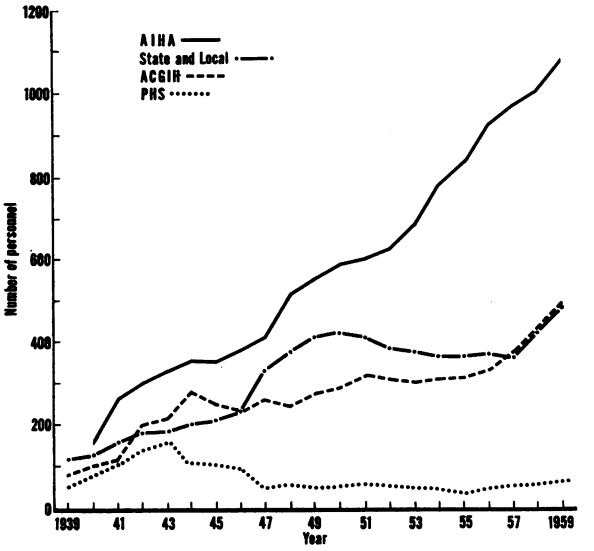
Other Trends

Some State units are stepping up their efforts to encourage the participation of local health departments in occupational health. The growth in number of local units has been mentioned. In addition, there appears to be somewhat greater use of local health department personnel in field activities such as in followup work and in routinely accompanying State personnel on plant visits. The extent to which the States enlist such services varies considerably. This variation may be due partly to the differences in the degree of development of local health services and partly to the lack of conviction in some States of the desirability of utilizing local personnel with limited training in industrial hygiene.

Interest in additional training for personnel is being stimulated by availability of more training facilities and Federal grants and fellowships. Our limited survey showed that 22 persons employed in the 14 units have received a year or more of graduate training during the past 5 years. Some 200 courses of at least 2 weeks' duration have been attended by staff members of these units. Approximately half of these courses have dealt with ionizing radiation. About two-thirds of the remainder have been in industrial hygiene, and the rest were air pollution courses. Likewise, the extent to which State and local personnel participate in training courses for other groups, such as local health department personnel, and in teaching industrial hygiene in schools and universities has also been steadily increasing.

Over the years a handicap to the development of State and local units has been personnel losses and turnover. Since 1942, by actual count of names in the annual directories of government industrial hygiene personnel, 1,470 different persons have been employed at one time or

Figure 5. Occupational health personnel in professional organizations, State and local units, and the Public Health Service, United States, 1939–59



NOTE: AIHA=members of American Industrial Hygiene Association. ACGIH=members of American Conference of Governmental Industrial Hygienists. PHS=professional staff of the Occupational Health Branch, Public Health Service, including personnel on loan to State and local units.

another by State and local units and the Occupational Health Branch of the Public Health Service. Subtraction of the number of persons on current staffs reveals that more than 900, many with excellent training and experience, have left official occupational health agencies for one reason or another during the past 18 years. However, many have remained in the industrial hygiene field, employed by industry, universities, the armed services, and other groups.

In the absence of data on employment of industrial hygienists outside government, the annual membership of the American Conference of Governmental Industrial Hygienists and the American Industrial Hygiene Association and personnel in the State and local units, starting with 1939, have been plotted in figure 5.

The rapidity of growth of the American Industrial Hygiene Association indicates the extent to which industry is employing industrial hygienists. Although a number of association members are in government, the curve provides a rough idea of the number of industrial hygiene personnel associated with nongovernment work.

If personnel requirements expressed by directors of State and local units interviewed in this survey are typical of present national needs, full-time occupational health staffs in State and local units should number at least 1,000. However, even this figure, more than double the present number, is a ratio of only 1 person for every 65,000 workers in the labor force.

Finally, there is definite evidence of increased financial support for some State and local programs from their own departments. This support was variously attributed. Eleven of the fourteen directors interviewed consider their engineering studies and services to industry their best selling points. Some mentioned specifically the quality and objectiveness of their studies; others, the high professional caliber of work performance which has caused industry to accept government services. Radiation and air pollution activities were mentioned as being popular and helpful in getting appropriations. One director credited his program's financial stimulus to a Statewide conference on occupational health sponsored by the Governor's Council; another to special training courses held for industrial personnel.

Other selling points specified were dissemination of information on industrial health through periodic bulletins and short pamphlets and working with professional organizations and medical groups to bring about a better understanding of industrial health and the contribution of government programs.

One director credits the effective support his program receives to excellent administration by his health commissioner, cooperation with other branches and agencies, and willingness to accept broader responsibilities. This point, the importance of being willing to accept broader responsibilities, cannot be overemphasized in a field with as infinite opportunities for service as occupational health.

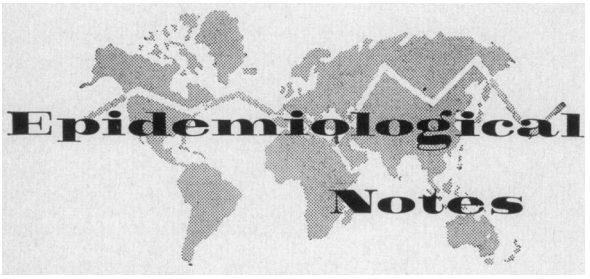
Conclusion

Recent growth trends in State and local occupational health units hold promise that the occupational health picture may be improving.

However, these changes mark only a beginning, since occupational health activities in general have long been grossly underdeveloped. Today's record staffs fall at least 50 percent short of the number needed to do a halfway adequate job. It is particularly encouraging to note the increase in local units, and it is hoped that this tendency and the strengthening of all official agency staffs will continue.

REFERENCE

(*1*) 1958 Directory of Governmental Air Pollution Agencies. Pittsburgh, Pa., Air Pollution Control Association in cooperation with the Public Health Service, 1958, 48 pp.



Encephalomyelitis in Horses

An early classic clinical description of what appears to have been western encephalomyelitis in horses has been found by Dr. Roy F. Feemster in a footnote to the section on poliomyelitis in the 1909 annual report of the Massachusetts State Board of Health. The footnote consisted of a letter from a practicing veterinarian in Minnesota describing a paralytic disease in horses, and formed a part of a discussion on sickness in animals and poliomyelitis in man. At that time, investigators were looking for evidence of a relationship between paralytic disease in animals and in man. The veterinarian may have been led to write the letter because of a high incidence of poliomyelitis in both Minnesota and Massachusetts in 1909. It is recognized now that the veterinarian probably was describing cases of western equine encephalomyelitis.

The first clinical description of encephalomyelitis in horses may have been made as early as 1831 following an outbreak of paralytic disease in Massachusetts. Dr. Alfred Large described a similar disease on Long Island in 1867.

The entire footnote, including the letter from Dr. C. S. Shore, Lake City, Minn., follows:

"The following letter, which reached the board through the State Board of Health of Minnesota, is of possible interest in this connection:

"In my veterinary practice during the past 5 or 6 years, I have found a disease appearing among 1- and 2-year-old colts that shows a line of symptoms corresponding very closely to anterior poliomyelitis of children. I have had from 5 to 10 cases a year during this time, the cases always occurring during the summer months, and the majority of them during the month of August. The affected colts are usually found in the pasture, unable to stand. The owner sometimes will notice an unsteady gait for 24 hours before entire loss of motion occurs. At first, these colts have a rise of temperature, ranging from 103° to 104° F.; pulse and respiration accelerated; animal sweats profusely; appetite remains fairly good, but there is some trouble noticed in swallowing, especially water; slight derangement of the bowels, tending toward constipation; more or less tympanitis present; retention of urine, for a few hours at least; head drawn back so the end of the nose tends to assume a position somewhat on a line with the neck. The death loss is less than 10 percent, but in those that do recover, the market value is depreciated to a very great extent because of the faulty gait the animal assumes after an attack of this disease, due to atrophy and contraction of certain muscles or certain groups of muscles. It seems that the flexor muscles of the limbs especially are more often affected than the extensor, and in almost all the cases some of these deformities are likely to remain permanent. The flexors of the limbs are liable to contract and cause volar flexion of the fetlock. The elevators of the head are also likely to become affected so as to cause the head to have a poky appearance; that is, it is carried out from the body.

"After one of these attacks the colt will remain down from 1 to 3 weeks, and will then continue to improve for a period of 1 year, but seldom, if ever, makes a complete recovery."

Dr. Feemster is director of the division of communicable diseases, Massachusetts Department of Public Health—CARL C. DAUER, M.D., *medical adviser, National Office of Vital Statistics.*