Swimming Pool Classification Program In West Virginia

By ROBERT S. JACOBSON, B.S.

The division of sanitary engineering of the West Virginia State Department of Health is now completing the second year of work on a proposed system of swimming pool classification. The trial program, started in the summer of 1950 and continued in 1951 with only minor changes, will continue during 1952. Personnel limitations, Government building restrictions, and material shortages have prevented the program from being established as rapidly as was originally planned.

For the past 25 years, it has been a requirement in West Virginia that all new pool construction be approved by the State health department, and compliance with this requirement has resulted in reasonably good installations. The State health department has also made it a practice to visit some of the pools during the year, and, through the cooperation of sanitarians from local health departments, to have more or less regular bacteriological sampling of the majority of the pools. Although this irregular coverage was of considerable benefit, many substandard pools continued in operation. The less desirable pools were generally quite old, dating back as far as 40 years. But it was not uncommon to find newer pools, constructed according to present standards, which had deteriorated through poor operation and maintenance. The swimming pool classification program was undertaken to eliminate the substandard pools by rehabilitation or closure.

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Procedures

Trained sanitarians from local health departments, serving 50 of the 55 counties in West Virginia, are responsible for providing the following on pools in their areas:

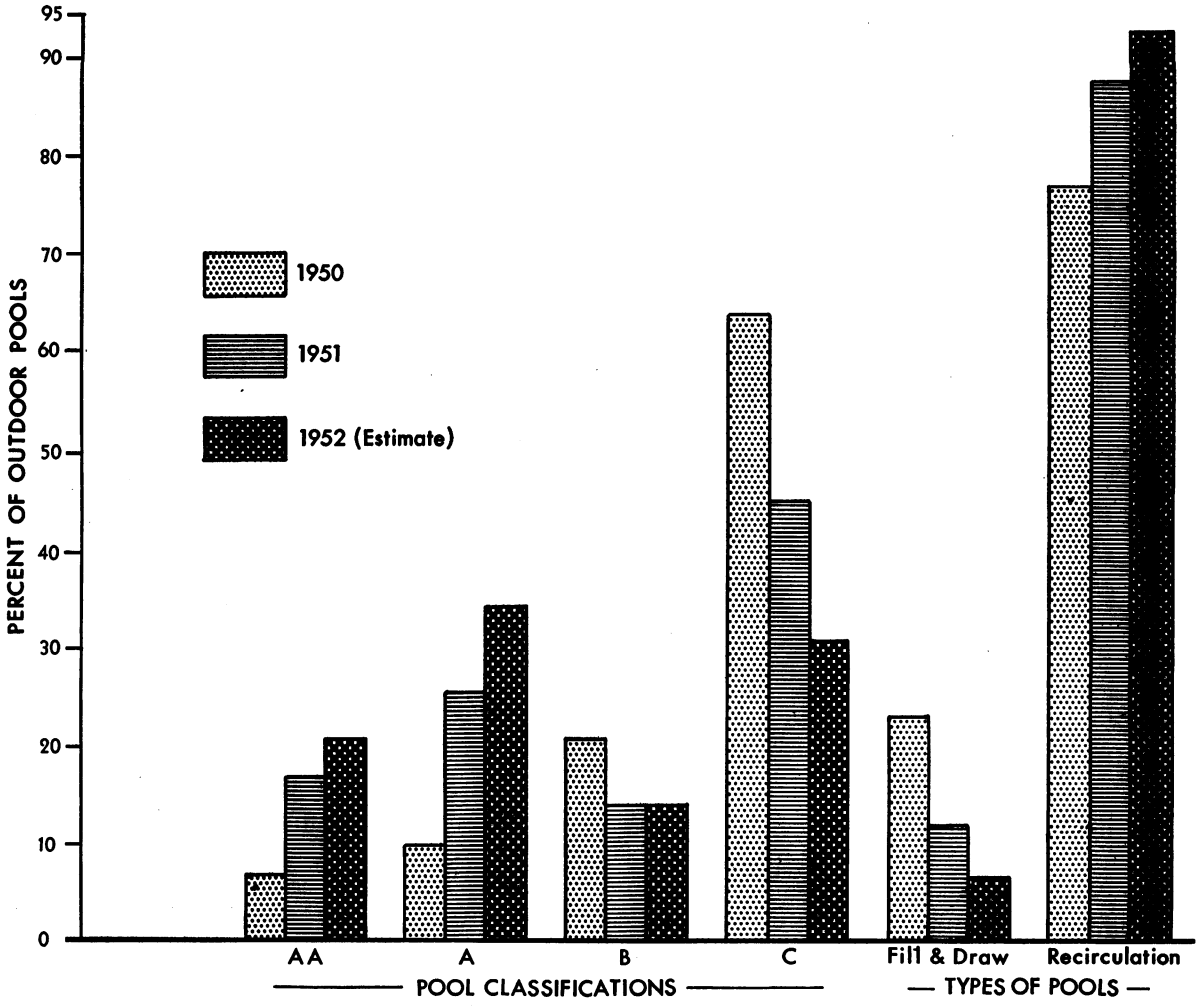
1. Outdoor pools: Each week while the pool is in operation, one bacteriological sample is taken; and free and combined chlorine residual, pH, and water clarity readings are recorded on a bacteriological survey sheet.

2. Indoor pools: Reporting is the same as for outdoor pools except inspections are made monthly and two bacteriological samples, one from the deep end of the pool and one from the shallow end, are provided.

All bacteriological samples are taken at a time when the pool has a substantial bather load and at the point or points of poorest chlorine distribution and the points of highest bather load, or both. The clarity standard is a 6-inch black disk on a white background, placed at the deepest point in the pool and observed from 10 yards. If the disk is clearly seen, water clarity is classified as "good," if dimly seen, "fair," and if not seen, "poor."

This information is submitted immediately to the State health department, where it is recorded. It is then returned to the sanitarians

Figure 1. Distribution of swimming pools according to classification and type, 1950–52.



along with the results of the bacteriological samples.

An engineer from the State health department's division of sanitary engineering visits each pool at least once a year—outdoor pools during the month of June and indoor pools prior to January 1. He inspects the pool, with the help of the local sanitarian, and scores it, using the Swimming Pool Classification Schedule. This schedule provides for scoring of pool construction, dressing room conditions, water treatment facilities, bacteriological count, and operation practices. It lists maximum points, indicating satisfactory attainment, for each item and subitem. The scores determine classification of the pools as AA, A, B, or C.

This classification program is patterned after a program developed by R. G. McCall of the University of North Carolina. The standards used are based on the report on "Swimming Pools and Other Bathing Places," published jointly by the American Public Health Association and the Conference of State Sanitary Engineers. Minimum construction and operation requirements include the following:

1. Pool construction: Required to be of impervious, smooth material; overflow gutters around periphery of pool with drains at 15-foot intervals; sufficient inlets and outlets to produce uniform circulation, maintain chlorine residuals, and eliminate dead spots; depth proportions sufficient to provide adequate area under 5 feet and adequate depth at diving end; fence or barrier around pool area; ladders for exit from pool; and proper depth markings.

2. Dressing rooms: Located conveniently to

pool with entrances at shallow end and access to pool only after passing through a shower; one shower per 40 bathers expected at time of maximum load; and one toilet per 40 women and one toilet plus one urinal per 60 men.

3. Water treatment: Turnover, with filters, every 8 hours or less; constant head orifice or positive displacement pump-type chemical feeders for alum and soda ash; positive feed chlorinator and control kit; indicator to show rate of filtration and backwash; wash water visibility; hair and lint catchers; suction cleaner; loss of head gauges; and absence of cross connections with city water supply.

4. Operation: Chlorine residual at least 0.3 ppm free available chlorine or 0.8 ppm combined chlorine; pH between 7.0 and 7.6; water clarity as indicated above; no sediment or slime on pool bottom; inspection of bathers prior to entering the pool for cleanliness, respiratory infections, open cuts or sores; and adequate lifeguards and first aid equipment.

The active participation of the local sanitarian in this program is an essential requirement for its success. Out of a possible total of 100 points, about half (47) are based on information submitted by him.

Thus far pool grades are available only to the pool owner and the local health department. It is intended, however, that, when the program becomes a State health department regulation, grades shall be announced publicly—on July 1 for outdoor pools and on January 1 for indoor

Figure 2. Relationship between bacteriological quality of pool water and chlorine residuals.

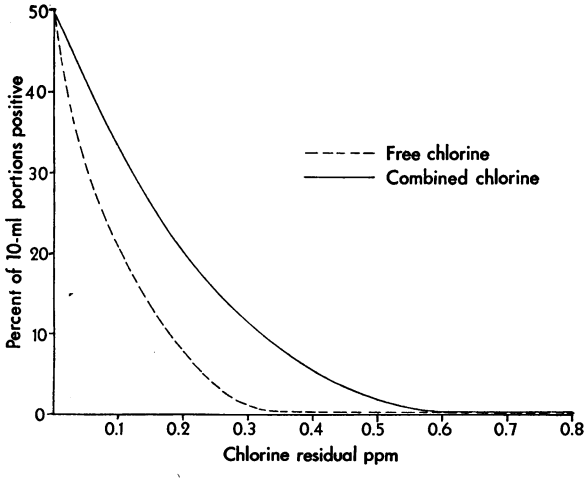
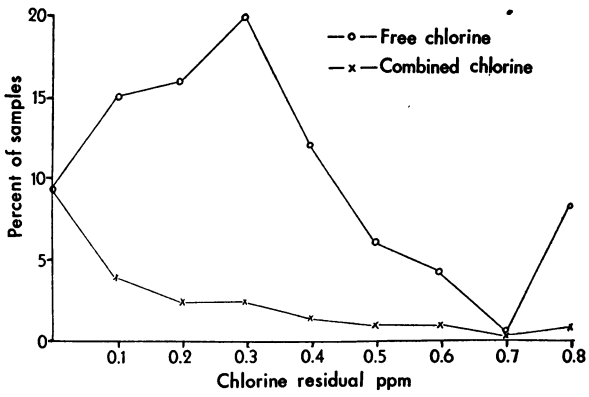


Figure 3. Distribution of samples according to chlorine residuals.



pools. A continuous record will be kept on each pool from the information submitted by the local sanitarian, and when this information indicates a change of classification, the change will be made and publicly announced. It is also planned that operating permits will not be issued to pools classified as C. At present, public opinion is the chief "wedge" for improvement, although the State health department can and does close dangerous public pools.

Prior to the outdoor swimming pool season of 1951, four 1-day swimming pool clinics were held at various locations in the State. These clinics were well attended, and it was generally agreed that they were of help to pool operators and owners. Included among topics discussed were: modern recirculation equipment; good swimming pool housekeeping; chemical treatment and control; swimming pool paint and resurfacing material; and the pool classification program.

Results

A great deal of improvement has been made in practically all swimming pools in the State, and the interest and cooperation of the pool owners and operators have been very good.

Figure 1 illustrates graphically the improvement made in outdoor pools. During the 2-year period (not including 1952), 48 percent of the fill and draw pools have been converted to the recirculation type. The number of Class AA and Class A pools has increased 39 percent, and the number of Class C pools has decreased 29 percent.

It has long been established that free chlorine is a much better disinfecting agent than combined chlorine. A comparison of the effects of these two agents on the bacteriological quality of pool water substantiated this point (fig. 2). The data for this analysis were based on 819 samples of pool water (4,095 10-ml. portions) and 819 chlorine residual readings, submitted by the local sanitarians.

In interpreting figure 2, consideration should be given to the data in figure 3, which show that a comparatively small number of samples was submitted for high combined-chlorine residual readings. This portion of the curve in figure 2, therefore, is not as accurate as the rest. However, it should be pointed out that since no pools in West Virginia use chlorine-ammonia treatment, samples containing combined chlorine at concentrations of 0.5 and above probably contained some free chlorine. Furthermore, although uniform instructions were issued to all sanitarians on the methods by which free and combined chlorine should be determined, it is reasonable to assume that these instructions were misinterpreted by a few.

Summary and Conclusions

After 2 years of experience in operating a swimming pool classification program on a trial basis, the West Virginia State Department of Health reports the following results and conclusions:

1. The interest and cooperation of the local sanitarian are necessary to the success of the program.

2. Free chlorine has been verified as a better disinfecting agent than combined chlorine.

3. The number of fill and draw pools has been reduced 48 percent.

4. The number of Class AA and Class A pools has been increased 39 percent.

5. The number of Class C pools has decreased 29 percent.

6. The interest and cooperation of pool owners and operators have been very good.

7. The results obtained indicate that the program is worth while, and it is planned to continue it within the limits of existing facilities.

PHS films

Onchocerciasis: The Blinding Filariasis

16 mm., sound, color, 17 minutes. 1951.

***Audience:* Physicians, medical students, specialists in tropical medicine.**

***Available:* Loan—Apply Public Inquiries Branch, Public Health Service, Federal Security Agency, Washington 25, D. C. Purchase—To be arranged through Castle Film Division, United World Films, 1445 Park Avenue, New York 29, N. Y.**

Serving both as a graphic introduction to onchocerciasis and as an interesting documentation of an epidemiological approach to the study of this important tropical disease, this film was produced jointly by the Laboratory of Tropical Diseases, National Institutes of Health and the Pan American Sanitary Bureau.

It is divided into five main sections: etiology, epidemiology, clinical manifestations, diagnosis, and treatment.

The etiology section details the clinical and laboratory investigative techniques used, including biopsy sampling, microscopic and photomicrographic observation, and microgross examination of the Simuliidae. The epidemiology section documents the fly habits, larvae, pupae and adult stages, and collection-identification methods by dye powder coloring. The section on clinical manifestations elaborates on the chronic aspects of the disease and discusses, by means of the perimeter and corneal microscope, the conditions of photophobia, conjunctival pigmentation, atrophy of the iris, and visual acuity. The diagnosis section includes biopsy and microscopic examination, particularly the characteristic protein reaction induced by oil of hetrazan. Surgical methods and methods of medication involving suramin sodium compounds, such as germanin, bayer 205, and antrypol, are portrayed in the treatment section.

The majority of the footage of the film was taken by Dr. Thomas A. Burch, in the Yepocapa area of Guatemala.