THE NEED FOR STANDARDIZATION IN MOSQUITO CONTROL OPERATIONS

CHARLES F. SCHEEL
Vice-President, Des-Plaines Valley Mosquito Abatement District

Productive industry now quite generally recognizes standardization as fundamental, and that without it, mass production, and our high standard of living, would be impossible. This attitude has come about gradually, and has been brought about largely through research. For industrial research alone this country now spends more than twice as much as it did in 1940, and with the further application of the newer technologies, is going on to spend even more. In this development standardization becomes even more important.

According to Benjamin Melnitsky, "Standards are practicable, profit-provoking solutions to recurring problems. Established tentatively, they are couched in objective terms and are based on the consent of those affected. They facilitate and often promote general usage of the best thoughts and practices on the subject being standardized."

Through standards, wasteful duplication, contradiction, and overlapping of effort can be avoided. In the case of research which leads to production, it is obvious that standardization is necessary not only in materials but in scientific method. The frugal use of time, material, and mental effort in a scientific research problem at least implies a certain set of standards, and adherence thereto.

Refer, for example, to the literature on yellow fever as a starting point; here was a problem which for its solution called for knowledge not then possessed. All resources, from the use of earth-moving equipment to the delicate techniques of the medical scientists, were brought to bear on the problem, each group using standards within its own field. In fact, little progress would have been made, had there not been standardized procedures in use for each phase of the work.

In the same way progress in vector control in other fields is accomplished. Nevertheless, one can find everywhere evidence that full advantage is not being taken of standardized procedures for certain operations—procedures that have been worked out in one district, which might well be more widely adopted. If we would only familiarize ourselves with available practical knowledge and experience in the operating field, and take more advantage of each other's hard-earned experience, we might be amazed at the cost reduction possibilities. The plea is made for a more uniform approach to the common problems, although it is recognized, of course, that variability must be taken into consideration in establishing a standardized abatement routine.

Equipment manufacturers, among others, have divergent views as to what may constitute proper machine treatment for a common field problem. Where the operating unit has the facilities and the skills to make a choice, this can be an advantage. At other times this diversity can become expensive, and a definite handicap. Lack of standardization in operating instructions accompanying equipment can also be frustrating and time-wasting.

Considering a common problem, in fogging for mosquito control, there are just about as many ideas and procedures in operation as there are fog machines. Questions such as when to employ wet or dry fogs, and the dosage to be used all cause delays because standard procedures either are not available or have not been adopted. Dosages of DDT vary from 0.1 lb. to several pounds per acre, under much the same conditions but in different areas, and the formulations may range from 1½ percent to 8 percent or more of toxic ingredient.

If not due to strictly local reasons the variations may be due to variations in the toxicity or other characters of the basic materials, which, if true should, in turn, be scrutinized. In the Middle West, a study of a certain group of competitive bids revealed a considerable spread of fillers, insolubles and impurities in samples submitted. In this analysis it was noticed, surprisingly, that next to the highest bidder was the best buy, where the net over-all price differential was as much as four cents a pound.

Easily interpreted standardized specifications, where they are missing, for raw material and other items used on either a critical or volume basis in our business, with recommendations for simple testing routines, are most certainly worthy of study. The question of when to use a dry or wet fog is not answered to everyone's satisfaction, possibly because various opinions on acceptable micron size and volume release have never been properly reconciled. This entire area of the use, type and quality of basic materials employed in abatement practices is unquestionably a fertile field for cost reduction through standardization.

There must be among our operating people enough experience accumulated over the years which, if laid out on the table, carefully studied and talked through, would eliminate many of these operating variables and effect some handsome economies. Such studies could reasonably be expected to open the way to the establishment of working tables covering optimum rates of application, selection of type and speed of equipment and a determination of the kind and density of material necessary to produce the best results with a given set of variables.

Another phase of our activity which should be scrutinized because of a lack of standardization, is the means employed to determine the scope of our problem and the effectiveness of our control efforts. There seems to be quite a diversity in the approach to this very important facet of our business. In general, there appear to be three broadly used means for obtaining this information, namely: the mechanical method employing the use of slides, traps or other such devices; biological arrangements where landing and biting rates are observed; and the land and water survey procedure. No doubt each of these approaches or the desirable portions of each should form the basis of a consensus on how best to recognize the breadth of the problem before us and how to intelligently present the results and changes necessary to improve control measures. In this connection we have learned of instances where no effort whatsoever along this line is employed in the district to determine results. Here too much assurance of successful operation is based upon casual observation and on the complaints of the surrounding public, who have been conditioned to feel that two or three bites of an evening are sufficient indication of poor control. Often no data are at hand to refute such complaints, although it may be known by the district supervisor that pests have been reduced to below the annoyance level and that his fogging operations are successfully fulfilling their purpose. Conceivably much embarrassment can ensue under such circumstances. Just before leaving home for this convention, we were shown a copy of a survey and study of the mosquito measurement program conducted by a special committee of the California Association under the chairmanship of Mr. Theodore Aarons. It appears that the main purpose of this group was to review the relative effectiveness and economics of various methods in use throughout the state for measuring adult and larval mosquito population. Their intention, obviously, is to modify or correct significant parts in the program which would lead to the development of a set of recommendations to be acted upon by the board of directors of the California association. This seems like significant progress in a recognition of unwarranted diversification in practices. The study will surely lead to at least a state-wide acceptance of standardization in determin-

ing mosquito population densities and a degree of uniformity in appraising the effectiveness of their control practices.

We have large areas, state areas if you will, in which the overall issues of variables may be somewhat dissimilar between two sections, but are essentially the same within a given section. All areas have fogging or misting programs of some sort and use specific methods in appraising their effectiveness. If as a starter we do nothing more in an approach toward standardization than to rationalize our fogging, larviciding and testing procedures in sections where problem characteristics are known to be pretty much the same, and at the same time take full advantage of any available material on standardization as applied to control, the results would unquestionably be quite revealing. We have the scientific data, the field experience and a national organization which is making every effort to provide the necessary additional knowledge, impetus and inspiration to place our activities on a continuing sound operating basis, and we should take fuller advantage of these outstanding facilities.

In closing, liberty is being taken to quote a few paragraphs from a paper presented by Don M. Rees at the 20th annual conference of the California Mosquito Control Association in 1952, which seem to be pertinent to this paper: "There is no cure-all that will assure effective mosquito control. I have come to the conclusion that we will all too frequently become self-satisfied with our own method of operating our own local mosquito control program and if not disturbed we continue year after year with little change. When representatives from local districts attend meetings such as this and those arranged by the American Association they frequently learn that they are not obtaining effective results which are possible through the adoption of approved methods which are being used in other districts.

"In my humble opinion, mosquito control is a service that, through public demand, will not only remain but will be extended until all major centers of population in the Americas, where a mosquito problem exists, will eventually have a mosquito control program.

"I am also convinced that this public service of mosquito control can be most effectively, efficiently and economically conducted on a local level through the guidance and unification of a non-profit, non-political, strong parent organization such as the American Association.

"I am further of the opinion that without such a strong organization, mosquito abatement work will gradually be taken over by other local or federal governmental agencies at greater cost to the public and with less effective mosquito control results. The American Association invites all workers and agencies interested in the program to participate in this organization dedicated to more effective mosquito control.

"I am confident if we do not all cooperate, and assume the responsibility of directing and improving the mosquito control program through the American Association, we will unquestionably be taken over by some other agency, and the program directed for us."

Dr. Rees's remarks are surely to the point and need no embellishing. We should be our own severest critics rather than unnecessarily expose ourselves to the wrath and whims of any outside agency. Aside from the personal pride and satisfaction one should always derive from his individual accomplishments and their potential contribution to the health and comfort of mankind, let us never lose sight of what we owe to the public that supports our entire effort. The public reserves the prerogative and often assumes the role of challenging any procedure in our activity which appears to be costly and ineffective. His convictions may not always be supported by actual fact, but remember that there is no tougher task-master than an aroused tax-payer; one should always be prepared to meet intelligently his or any other challenge to our efforts.

Among the many possibilities of realizing this end, there is no more effective

approach than that of an enlightened collaboration of diversified views and practices, shaken down to uniform, economical and realistic application.

The medium of standardization is herewith humbly submitted as offering the greatest potentialities for this accomplishment.