

more than twelve, cannot keep lice no matter how dirty or otherwise unhygienic he may be. The very best time for such complete changes is every seven days; and this, it has been suggested, is the origin of the week.

The critical thing here is that complete changes are essential. Lice dislike dirt, and if only one clean piece of clothing is put on the insects will tend to migrate onto it. This has survival value, for it is the dirtiest piece which is most likely to be the next discarded.

In conclusion, as some of these points

suggest, there have been many advances in our understanding of lice during the past decade. The plea of medical entomologists to medical authors is therefore that they read the most modern publications before setting pen to paper. Otherwise, both current misconceptions about lice and the infestations encouraged by such misunderstanding will persist.

Source: The foregoing is a condensed version of the article "Human lice: A complex epidemiological problem" by John W. Maunder that appeared in the *CAREC Surveillance Report* of December 1983 (volume 9, number 12, pp. 1-4).

DRINKING-WATER QUALITY IN THE CARIBBEAN

Caribbean environmental health programs in the past have tended to focus on areas other than water quality control; and while Caribbean countries generally adopted the World Health Organization's 1971 standards for drinking-water, most failed to implement or enforce them. To help examine the more important problems that the Caribbean faces in this area and to provide a basis for future action, PAHO sponsored a workshop on "Introduction of the 1984 WHO Guidelines for Drinking-Water Quality and Their Use in Water Quality Improvement in the Caribbean." That workshop was held at Castries, Saint Lucia, on 26-29 June 1984. The following account is based on the workshop's final report.

A workshop on the introduction of the 1984 WHO Guidelines for Drinking-Water Quality and their use in drinking-water quality improvement programs in Caribbean countries was held at Castries, Saint Lucia, on 26-29 June 1984. The workshop was attended by 20 participants representing 15 Caribbean countries and territories,¹ as well as by staff members of PAHO, CARICOM, and the Caribbean Development Bank. Specific objectives of the workshop were as follows:

- 1) to introduce the WHO 1984 Guidelines for Drinking-Water Quality;
- 2) to review changes in guideline values and the reasons for the changes;

- 3) to review newly-included contaminants and their health significance;

- 4) to review the status of drinking-water quality in the Caribbean;

- 5) to provide a methodology for assessing the need to revise or establish national drinking-water standards;

- 6) to provide experience in utilizing a risk-benefit approach to national standards and regulations;

- 7) to provide, through the case-study method, experience in planning a drinking-water quality improvement program, with special emphasis on water quality control in small island countries and in small communities;

- 8) to promote drinking-water quality improvement,

¹Anguilla, Antigua, Bahamas, Barbados, Belize, Bermuda, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts, Saint Lucia, and Suriname.

The workshop was opened by the Honorable

Clendon Mason, Minister for Health, Housing, and Labor of Saint Lucia, and the water quality control situation in the subregion was reviewed. This review included a self-evaluation of progress made in each of the countries represented since the 1976 Pan American Drinking-Water Quality Conference in Trinidad; reports on this subject were presented by all but two of the countries represented. Data obtained from questionnaires completed by 14 countries in connection with these self-evaluations are shown in Table 1.

The workshop featured seven presentations by technical experts on the 1984 Guidelines, water contamination, water quality standards, and water quality control programs. Following these presentations, three working groups were organized to examine waterborne disease, water quality standards, and water quality improve-

ments on an island ("Ekoenamur") whose circumstances were synthesized from those prevailing in the participating countries. Work group reports on this synthesized situation were then presented, and a panel of technical experts provided a joint critique of these reports.

A plenary closing session carried out an evaluation of the workshop and approved the following recommendations:

1. *At the National Level:*

a) Each country should develop or upgrade its drinking-water quality standards, utilizing the new 1984 WHO Drinking-Water Quality Guidelines and taking into consideration local experience, multisectoral inputs, and a risk-benefit approach.

Table 1. Questions asked and responses obtained from 14 of 15 participating countries^a and territories regarding self-evaluation of progress in water quality control since 1976.

Questions	Replies		
	Yes	No	No answer
1. Does your country have programs to:			
a) educate the public in water quality improvement?	7	7	—
b) develop greater public awareness about water disinfection?	7	7	—
2. Has your country:			
a) designated a water quality agency?	13	1	—
b) defined legal authority?	7	7	—
c) established an improvement plan?	5	9	—
d) established water quality standards?	2	12	—
e) enforced these standards?	1	1	12
3. Has your country designated a monitoring and surveillance agency?	10	4	—
4. Does the surveillance agency have sufficient authority?	7	6	1
5. a) Does your country have laws to protect water catchment/recharge areas?	10	4	—
b) Are these laws enforced?	3	6	5
6. Does your country have an effective training program for:			
a) water plant/system operators?	7	6	1
b) public health inspectors (EHOs)?	11	3	—
7. Does your country chlorinate all public water supplies?	7	7	—

^aReplies were received from the following countries: Anguilla, Antigua, Bahamas, Barbados, Belize, Bermuda, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts, and Suriname.

b) Each country should develop and implement a comprehensive drinking-water quality improvement program which incorporates a deliberate and continuous selective sequencing of fundamentally important but feasible improvements, rather than establishing unrealistic goals and attempting large-scale or inappropriately rapid development and implementation.

c) National water quality improvement action plans should include enactment of legislation, adoption of standards, and enforcement in a continuous surveillance program, as well as water utility operational and management components, and (most importantly) a public education, motivation, and involvement component.

d) Each country should provide for the participation of key water quality personnel from water and health agencies in periodic meetings for both training and intercountry exchange of technical information.

e) Human resource development relative to the topic of water quality management should be carried out on a continuing basis for the appropriate personnel of water and health agencies.

f) An increased effort should be exerted to improve water treatment facilities so as to meet the water quality goals of the International Drinking-Water Supply and Sanitation Decade (1981-1990).

g) Community service organizations, churches, and other civic groups should be informed and enlisted to support drinking-water quality improvements, especially in the area of public education.

h) A public education and information effort should be mounted in each country to develop public awareness, understanding, and support of the health and social benefits of water quality improvement in the Caribbean.

i) Countries should consider every possible means to increase revenues for making necessary improvements in facilities and their operations so as to achieve better water quality.

j) Every country should review its water qual-

ity control program and take immediate steps to strengthen the identified weak areas.

k) Countries should prepare joint as well as individual project proposals to obtain external assistance from international agencies and banking institutions.

2. *At the Subregional Level:*

a) Consideration should be given to establishing and adopting Caribbean subregional water quality standards, or at least subregional water quality standard goals.

b) The countries should consider establishment of a subregional resource center for the development and dissemination of educational and training materials relating to water quality improvement, user education, and Decade² activities.

c) Consideration should be given to establishing a subregional laboratory (or upgrading an existing laboratory) to provide subregional services for the more difficult and specialized but necessary testing, with each country contributing toward its support.

d) Laboratory procedures should be standardized on a subregional basis using the Standard Methods³ as a reference document.

e) PAHO should assist on a subregional basis in the monitoring of workshop follow-up activity and, where possible, in the implementation of subregional or intercountry water quality control activities.

²The International Drinking-Water Supply and Sanitation Decade (1981-1990).

³American Water Works Association, American Public Health Association, and Water Pollution Control Federation, *Standard Methods for the Examination of Water and Wastewater (sixteenth edition)*, American Public Health Association, Washington, D.C., 1984.

Source: Pan American Health Organization, Introduction of the 1984 WHO Guidelines for Drinking-Water Quality and Their Use in Water Quality Improvement in the Caribbean: Report of a Workshop Sponsored by the Pan American Health Organization; Castries, Saint Lucia, 1984.