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Innovative Vector and Pest E-Learning for Environmental Health Professionals

Editor's Note: NEHA strives to provide up-to-date and relevant information on environmental health and to build partnerships in the profession. In pursuit of these goals, we feature a column from the Environmental Health Services Branch (EHSB) of the Centers for Disease Control and Prevention (CDC) in every issue of the *Journal*.

In these columns, EHSB and guest authors share insights and information about environmental health programs, trends, issues, and resources. The conclusions in this article are those of the author(s) and do not necessarily represent the views of CDC.

Environmental health professionals live in a constantly changing world. Staff turnover, shrinking budgets, program reorganization, and emerging threats such as the Zika virus are the new normal. Professional development opportunities are critical to maintaining and advancing this important workforce that protects public health. The need for high quality, interactive, and engaging education and training delivered in a consistent manner can be met through the use of e-learning, or online learning. E-learning has the unique ability to reach environmental health professionals in roughly 3,200 jurisdictions and can serve as a platform for cost-effectively increasing their knowledge and skills.

While the content for many in-person and e-learning courses is developed by either one or a small group of subject matter experts (SMEs), an innovative approach uses a collaborative framework that includes multiple organizations, partners, stakeholders, and SMEs to create informed content. The e-learning series, Vector Control for Environmental Health Professionals (VCEHP): The Importance of Integrated Pest Management, uses this innovative approach to provide new,

accessible learning opportunities in vector control and pest management for environmental health professionals. It is anticipated that the series will launch in early 2017.

Background and Significance

Diseases are resurging in the U.S. and its territories that were once believed to be of no significant public health threat. Environmental health professionals are continually being asked to take on additional responsibilities with fewer resources, including learning new skills or improving existing ones.

The Centers for Disease Control and Prevention (CDC) is working to increase environmental health professional training and development opportunities through its National Center for Environmental Health (NCEH). Historically, NCEH partnered with the National Environmental Health Association (NEHA) to offer between two and four classroom-based integrated pest management (IPM) three-day sessions per year. These sessions have provided strong foundational knowledge in the science, principles, and concepts of IPM since 2006. Each regional session attracted an average of 50 attendees. Due to budget constraints and other chal-

lenges, these sessions have been curtailed and different methods of learning were explored. The VCEHP e-learning series will meet increasing demand in a more accessible manner with no cost to the user.

Purpose

NCEH organized a multiorganization framework with the National Network of Public Health Institutes (NNPHI), Texas Health Institute, Tulane University School of Public Health and Tropical Medicine's Center for Applied Environmental Public Health, NEHA, and internationally respected SMEs in vector control and pest management to create the VCEHP e-learning series. The series innovatively equips environmental health and other professionals with the knowledge and skills to effectively reduce disease threats and other health concerns from vectors and public health pests. It uses the latest technology for enhanced learner-centric interaction, experience, and resource accessibility.

Methods

A core team of 15 people from the five organizations met biweekly using a video/shared-

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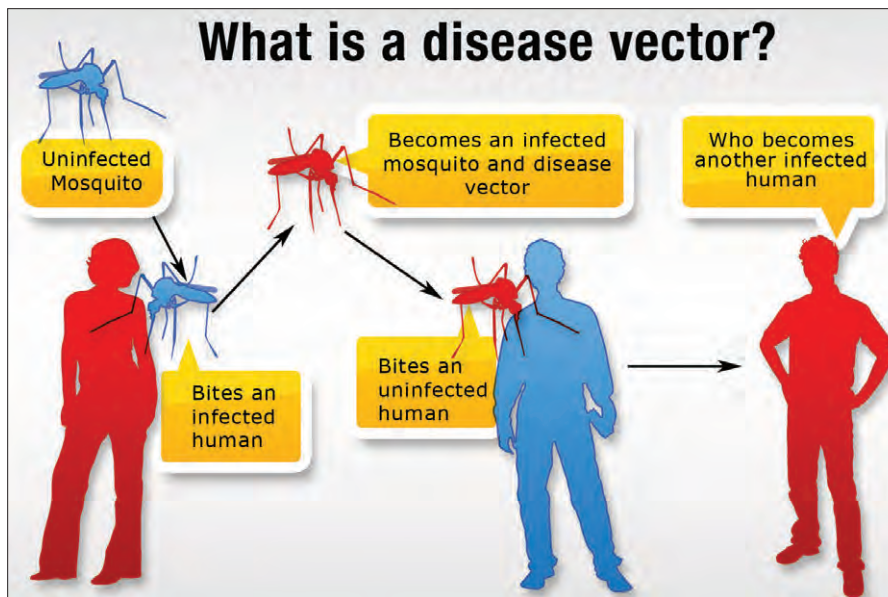
TABLE 1

Vector Control for Environmental Health Professionals (VCEHP) E-Learning Courses

| | Course Name | Average Time to Complete Course (Minutes) |
|-----------|-------------------------------------------------------------------|-------------------------------------------|
| VCEHP 101 | Vectorborne Diseases of Public Health Importance | 120 |
| VCEHP 102 | IPM Basics for Environmental Health Professionals | 72 |
| VCEHP 103 | Performance Assessment and Improvement of Vector Control Services | 81 |
| VCEHP 104 | Tick Biology and Control | 73 |
| VCEHP 105 | Mosquito Biology and Control | 133 |
| VCEHP 106 | Toxicology of Pesticides for Environmental Health Professionals | 98 |
| VCEHP 107 | Rodent Management | 137 |
| VCEHP 108 | Public Health Insect Pests in Food and Housing Environments | 145 |
| VCEHP 109 | Pest Management Considerations for Schools | 96 |
| VCEHP 110 | Risk Communication Basics for Environmental Health Professionals | 77 |
| VCEHP 111 | Bed Bugs—Identification, Biology, and Control | 70 |

FIGURE 1

Example of a Course Screen Explaining Disease Vectors



screen application to develop each VCEHP course. The team collaboratively identified and solved issues, assessed progress, and determined next steps. Aided by the knowledge and expertise of seven SMEs, the team

developed 11 courses (Table 1). A 21-step process facilitated content development, course production, and three phases of testing. A pilot test was conducted during fall 2015 by a sample of environmental health

Did You Know?

- Approximately 75% of all new or emerging diseases threatening human health today are zoonotic, with many of these being vectorborne in nature (Blancou, Chomel, Belotto, & Meslin, 2005).
- Since 2008, over 51,000 state and local public health jobs have been lost, representing more than 19% of the total state and local health department workforce (Association of State and Territorial Health Officials, 2014).

professionals. A total of 160 evaluations were completed. Each course had at least six pilot test evaluations completed.

The primary target audience for VCEHP is environmental health professionals working in local or state health departments, tribal organizations, schools, or private pest management companies. Courses within the VCEHP series include

1. Vectorborne Diseases of Public Health Importance,
2. IPM Basics for Environmental Health Professionals,
3. Performance Assessment and Improvement of Vector Control Services,
4. Tick Biology and Control,
5. Mosquito Biology and Control,
6. Toxicology of Pesticides for Environmental Health Professionals,
7. Rodent Management,
8. Public Health Insect Pests in Food and Housing Environments,
9. Pest Management Considerations for Schools,
10. Risk Communication Basics for Environmental Health Professionals, and
11. Bed Bugs—Identification, Biology, and Control.

VCEHP users will be able to access tools and resources to apply new knowledge in the field. Each course within VCEHP is designed to enable timely content updates to retain relevance and enhance applicability (Figures 1 and 2). Individuals completing the courses and the final evaluation instrument will have the option to receive continuing education credit through NEHA.

Over 92% of pilot testers agreed that they would recommend VCEHP to a colleague across all 11 courses. Over 85% of pilot testers reported they would be able to apply acquired knowledge in their work. Over 81% reported the information they gained will enhance their ability to do their job. One pilot tester commented, “[I am] better able to serve the citizens of my county and the cities within the county. I feel better prepared to respond to questions regarding the use of pesticides. I also found several good references should I have a question that I couldn’t answer.”

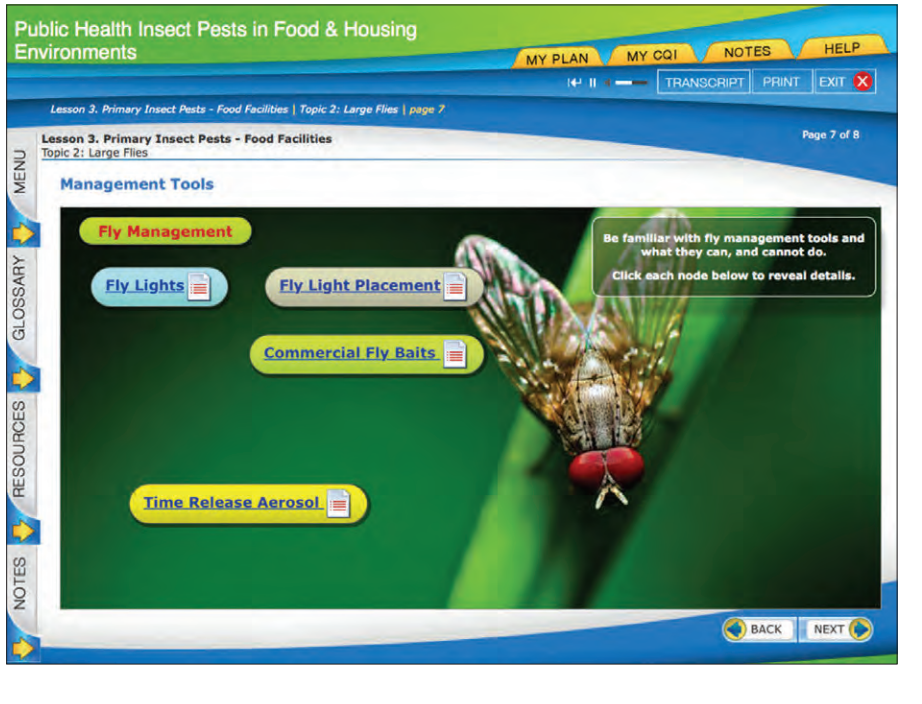
Conclusion

The VCEHP e-learning series will provide much needed training at no cost to environmental health professionals in early 2017. For more information, contact Martin Kalis with CDC’s Environmental Health Services Branch at mkalis@cdc.gov. For more information about other tools and resources offered through NNPHI’s Public Health Learning Network, please visit www.nnphi.org.

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FIGURE 2

Example of a Course Screen on Fly Management



References

Association of State and Territorial Health Officials. (2014). *Budget cuts continue to affect the health of Americans*. Retrieved from <http://www.astho.org/budget-cuts-Sept-2014>

Blancou, J., Chomel, B.B., Belotto, A., & Meslin, F.X. (2005). Emerging or re-emerging bacterial zoonoses: Factors of emergence, surveillance and control. *Veterinary Research*, 36(3), 507–522.

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