

# Pesticide Competency Guidelines for Medical and Nursing Education

## *Content, Insertion Points, and Resources for Educational Curricula*

The Pesticide Education Competencies outlined in this document are intended to apply to medical and nursing schools as guidelines in training students to recognize, manage, and prevent pesticide-related illness. The guidelines laid out below are intended as an accompaniment to *the Recognition and Management of Pesticide Poisonings* (U.S. EPA, 1999) handbook for health professionals.

The five competencies (see list on next page) were developed as part of the Draft Implementation Plan (NEETF, 2000) of the *National Strategies for Health Care Providers: Pesticides Initiative*. An initial start at defining competencies was carried out by a subgroup of the Education Workgroup in May 1999, and was further elaborated in July 1999 by a small committee. This set of five competencies was accepted by the full Education Workgroup. They are derived from a combination of recommendations from the Institute of Medicine for incorporating environmental health into medicine and nursing curricula. Competency I, Knowledge and Concepts of Pesticides, is considered the most important and basic level that should be incorporated into all curricula as a top priority.

For each competency area, we specify the content of the information to be learned, identify points in the curriculum where this information might be inserted, and suggest resources to consult. An asterisk (\*) denotes material for residents and nurse practitioner students over and above that of the undergraduate.

We strongly recommend that pesticide content be integrated into *existing* adult health, pediatric, research, ethical/legal units of instruction and community health nursing courses, both didactic and clinical. This can be done, for example, by using pesticides to enhance existing case studies, or as exemplars. In suggesting points of insertion into the curriculum, we have included such components as environmental or preventive medicine electives, public sector medicine courses, etc. These serve only as examples; many schools will have other courses or departments that the material could fit into equally well, such as Problem-Based Learning.

A more complete resource library with links to sources of information is available online at <http://www.neetf.org/Health/Resources/healthcare.htm>.

## Five Educational Competencies

### Competency I: Knowledge and Concepts of Pesticides

#### I-1. Principles of Environmental and Occupational Health Related to Pesticides

- a. Understand the basics of environmental and occupational health
- b. Understand the broad spectrum of chemicals classified as pesticides and their areas of use
- c. Understand mechanisms and pathways of exposure
- d. \*Understand temporal relationship between exposure and symptom
- e. \*Understand advanced toxicology, specifically related to organophosphates, carbamates, and pyrethroids

#### I-2. Individual Patient Knowledge and Skills

- a. Relate the environment in which the patient (and family) lives, works, and plays to potential hazards and exposures
- b. Identify risk factors for occupational pesticide exposures
- c. Identify risk factors for pesticide exposures at home
- d. Recognize that other family members may be ill from pesticide exposure in addition to index patient
- e. Understand potential moral, ethical, and legal implications for patients of reporting and referral

#### I-3. Population-Based Health Knowledge and Skills

- a. Understand the concept of population-based health as it pertains to pesticide exposure
- b. Recognize socioeconomic impacts of pesticide-related illness
- c. Understand potential moral, ethical, and legal implications for the community of reporting and referral
- d. Possess a basic awareness of the role of prevention, and general awareness of benefits of alternatives to conventional pest control.

### Competency II: Diagnosis and Assessment

#### II-1. Environmental History: Be able to take an environmental history

#### II-2. Differential Diagnosis: Be able to consider pesticides in a differential diagnosis of poisoning and be aware that signs and symptoms of pesticide over-exposure may be non-specific

#### II-3. Signs and Symptoms: Recognize signs and symptoms of pesticide over-exposure, especially widely used cholinesterase-inhibitors and pyrethroids insecticides

\* An asterisk denotes material for residents and nurse practitioner students over and above that of the undergraduate.

## Competency III: Treatment, Intervention, and Referrals

- III-1. Treatment: Be able to effectively treat health conditions related to pesticide over-exposures
- III-2. Intervention: Be able to advise health care providers on decontaminating patients and the environment following over-exposure
- III-3. Referrals: Understand when to make referrals to appropriate occupational / environmental health specialists
- IV-4. Follow-Up: Be able to arrange appropriate patient follow-up

## Competency IV: Risk Communication

- IV-1. Patient Education: Be able to educate patients about basic routes of exposure and absorption, and how to minimize exposure to pesticides
- IV-2. Labels: Be able to advise patients on how to read pesticide labels

## Competency V: Reporting Requirements and Regulations

- V-1. Surveillance Needs: Understand the importance of surveillance and incident reporting
- V-2. Reporting: Know how to participate in mandatory state surveillance systems and reporting requirements
- V-3. Regulations: Understand other legal and regulatory provisions that have implications for health care providers
- V-4. \*Legal Framework: Understand framework of federal laws that address pesticides and pesticide exposures
- V-5. Ethical, Legal, Advocacy: Understand ethical, legal, and advocacy roles of health care providers in pesticide exposure incidents

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