PENNSTATE
Pesticide Education Program

Upgrading Pesticide Safety Education Curriculum and Increasing Student Participation

Kerry Richards, Christina Becker, and Sharon Gripp

Incorporating hands-on activities to teach pesticide safety

Hazard (risk of pesticide use) = Toxicity x Exposure

Learn how to give the toxicity and exposure demonstrations and much more on our Pesticide Safety and Pest Management Library web site at:

library.pested.psu.edu/v/Video/NEPSEC/
(or go to **library.pested.psu.edu**, click on *Video*, then *NEPSEC*)

Interactive demonstrations:

- Hands-on Label Comprehension
- Calibration Demonstration
- Pesticide Spills
- Pesticide Storage
- Pesticide Formulations and Compatibility
- Toxicity and Exposure Reduction
- Non-Traditional Pesticide Training Skits
- Florescent Tracer Manual
- Pesticides on the Move—Transporting Pesticides Safely
- Field Sprayer Safety Kit
- PPE Removal and Decontamination
- PPE—What the Well-Dressed Applicator is Wearing
- Exploding Poly Tanks—Buy Them Right and Inspect Them Now

Pesticide Education Program
www.pested.psu.edu

Please contact our office if you need more information, a list of items, or some tips to help make these demonstrations work.

- Kerry Richards: kmh14@psu.edu or 814-865-2134
- Chris Becker: cxy2@psu.edu or 724-438-0111
- Sharon Gripp: sgripp@psu.edu or 814-863-8714
- Office contact:
  Kathy Branstetter: krb16@psu.edu or 814-863-0263

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Risk of Pesticide Use = Toxicity X Exposure

Hands-on activities to demonstrate these concepts in your classroom and increase student involvement.

For additional information on additional video presentations of hands-on demonstrations please email:

Kathy Branstetter at krb16@psu.edu

LD_{50} Demonstration:

Supplies:

M&M's – These represent the concentrated active ingredient of a product the company wants to bring to the market.

"Dixie" cups – These will hold the amount of "product/M&M's" that will represent the "lethal" dose for each of you "laboratory rats/participants."

Demonstration: The purpose of this demonstration is to illustrate how the level of toxicity is determined for a pesticide. Toxicity of pesticides is determined by the dose of the concentrated active ingredient that it takes to reach a 50% mortality rate with a test population of animals. As the **L**ethal **D**ose it takes to reach a **50%** mortality rate, it is expressed as the **LD_{50} value** of the chemical.

Procedure: It doesn't matter how many participants that you have for this demonstration, as long as you have an even number.

Step One:
Fill half of the cups ½, ¾, or completely full with M&M's
Fill half of the cups with anywhere from 1 – 8 M& M's per cup, at least one cup should have 8 M&M's.

Step Two:
Distribute the cups those participating in the demonstration, and have the participants stand.

Step Three:
Explain to the participants that they are the test population of "laboratory rats" for the experiment that will determine the toxicity of this "product" that is heading to the market. The only thing stopping them from eating as much of the "product" that they want is that the level in their cup represents a fatal dose to them as a "laboratory rat."

Step Four:
Explain to the participants that they should eat their M&M's one at a time, but fairly quickly. When they have finished eating the M&M's in their cup they should sit down because they have reached the dose that was lethal to them. When the half of the "Laboratory Rats" (those that had the smaller amounts in their cups) are seated – the LD_{50} value has been reached.

Personal Protective Equipment (PPE) Demonstration:

Supplies:

In an XXL Ziplock Bag:

Blue Tyvek Suit
Grey Tyvek Boot Covers
Chemically Resistant Apron
Protective Glasses
Respirator
Four pair chemically resistant gloves
UV Blue- Invisible Fluorescent Dye
"Weed- Me-Feed-Me" – (Grape nuts Cereal coated with UV Blue)
Make-Up Brush
Black light

Choose participants that are wearing primarily dark clothing; also try to find one person wearing short sleeves and another person wearing long sleeves.

Demonstration: The purpose of this demonstration is to illustrate how exposure to pesticides can be significantly reduced to nearly eliminated with the use of Personal Protective Equipment (PPE).

Procedure:

Step One:

- Have one participant put on the blue suit, booties, and gloves
- Have another participant (preferably someone wearing short sleeves) put on a pair of gloves
- Have another participant put on only one glove (preferably someone wearing long sleeves)
- Have one participant put on the safety glasses
- Have one participant (preferably someone wearing long sleeves and long pants) put on the apron
- Have one participant with no protective clothing on just carry the box

Step Two:

- If there is a place close by where they can do a mock "Weed and Feed" application. Have the person carrying the box pour the Weed Eliminator (which is really grape nuts coated with the UVBlue Dye) into the hand held applicator and send the participants out and ask them all to take a turn at making the "application." Have everyone pretend that the applicator gets clogged and the need to unclog it.
- If there is not a convenient place to do this, place some of the UVBlue power on a paper towel and rub it on the participant's gloves, the suit, a big spot in the middle of the apron and across the forehead of the person wearing the safety glasses.

Step Three:

- Have the participants stand in the front of the room
- Turn out the lights and darken the room as much as possible.
- Have another participant using the black light shine the light on the participants following my instructions.

Step Four:

- Have all participants wash their hands, forehead, and other "exposed" areas.