

## GREEN TOBACCO SICKNESS



## GREEN TOBACCO SICKNESS

### Self Assessment

(to be completed before reading GTS content)

1. What is green tobacco sickness?
    - a. symptoms caused by exposure of wet tobacco leaves to bare skin
    - b. nicotine poisoning
    - c. a preventable illness
    - d. all of the above
  2. What can be done to prevent green tobacco sickness?
    - a. avoid working in tobacco just after a rain or while leaves are dewy
    - b. cover bare skin and wear protective water-proof clothing
    - c. change clothes after leaving the tobacco field, even if clothes are dry
    - d. shower as soon as possible after leaving field
    - e. all of the above
  3. Which of the following is NOT a common symptom for green tobacco sickness?
    - a. dizziness
    - b. headache
    - c. nausea
    - d. vomiting
    - e. skin rash
  4. Is green tobacco sickness life-threatening?
    - a. No, it is a serious condition but usually not deadly.
    - b. Yes
  5. Who is at risk of green tobacco sickness?
    - a. only first-time workers in tobacco fields
    - b. only workers over 65 years old
    - c. anyone who works in tobacco fields
    - d. only non-smokers
  6. Which conditions make it more likely that someone will become sick from tobacco?
    - a. long exposure to tobacco leaves
    - b. individual sensitivity to tobacco
    - c. wet leaves from dew or rain
    - d. exposed skin
    - e. all of the above
  7. How often should a farmworker drink water during the day?
    - a. only when thirsty
    - b. 1 cup of water every hour
    - c. 2-4 cups of water every hour, depending on the heat index
    - d. it doesn't matter
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## GREEN TOBACCO SICKNESS

### Self Assessment

(continued)

8. Which of the following is correct treatment for green tobacco sickness?
- a. rest
  - b. hydration
  - c. anti-nausea medication
  - d. a trip to the doctor, if vomiting persists
  - e. all of the above

Answers: 1 (d), 2 (e), 3(e), 4(a), 5(c), 6(e), 7(c), 8(e)

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## GREEN TOBACCO SICKNESS

### Supporting Information for Outreach Workers

#### **What is green tobacco sickness?**

Green tobacco sickness is a set of symptoms caused by nicotine poisoning, often due to exposure during tobacco harvesting. Nicotine is a chemical found in tobacco that is water-soluble, which means that it diffuses from the tobacco leaves into dew, rainwater, sweat and other fluids. During the harvesting of tobacco, the nicotine-infused fluids come into contact with the skin and are transdermally absorbed through the skin and into the bloodstream. Factors that can increase nicotine absorption by the skin and therefore the risk of green tobacco sickness include: hot weather, humidity, alcohol consumption and scrapes or scratches on the skin's surface. Heat causes increased blood flow near the skin, as a mechanism for cooling, which allows nicotine to pass more readily into the bloodstream. Humidity prevents sweat, dew or rain from drying and allows nicotine to remain on the skin or in clothing longer. Alcohol is thought to increase blood flow near the skin, also allowing nicotine access to the bloodstream. Finally, any damage to the skin such as an abrasion or tear allows chemicals to more readily enter the body and begin acting on the body's systems.

#### **How are farmworkers exposed to nicotine?**

Physical exposure to nicotine most commonly results from farmworkers holding freshly-picked tobacco leaves under their arms, as well as the skin of the arms and head brushing the plants as the workers stoop to pick. The tobacco may be wet from rain or dew, and workers may be sweaty or wearing clothing that is damp with rain or sweat. Studies have shown that nicotine concentration is 9 mg per 100 ml of dew, and that farmworkers may come into contact with 600 ml of dew per day while working in the fields. This translates to a nicotine exposure equal to the worker having smoked 36 cigarettes per day.

#### **What are common symptoms of green tobacco sickness?**

Nicotine poisoning through the skin (transdermal) is slow acting, and thus workers may not begin to notice symptoms for hours after the initial exposure to the wet tobacco. Typical symptoms include weakness, dizziness, headache, nausea, vomiting, cramps, respiratory difficulty and excessive salivation. Symptoms are usually delayed, and vary according to dose and individual susceptibility. Interestingly, farmworkers have reported that the symptoms they perceive to be most serious are insomnia (inability to sleep) and anorexia (inability to eat). This is probably because these symptoms keep workers from having the strength to work hard in the fields the next day.

#### **How is green tobacco sickness diagnosed by a medical professional?**

There are no established diagnostic criteria for green tobacco sickness, but the diagnosis is commonly defined as (1) having had headache or dizziness, and (2) having had nausea or vomiting, and (3) having worked in tobacco that day or the previous day.

#### **How can farmworkers prevent green tobacco sickness?**

If avoiding wet leaves is impossible, farmworkers can use protective clothing and follow the exposure with a few simple steps to help prevent green tobacco sickness. Because nicotine enters the body through the skin, workers must make sure that skin is adequately covered by wearing a long-sleeved shirt, long pants, shoes that completely cover the feet, and preferably

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Supporting information for outreach workers: Green Tobacco Sickness curriculum - 2

a hat and gloves. Waterproof jackets or rain gear are effective in preventing the nicotine-infused dew or rain from coming into contact with the skin. If possible, farmworkers should use waterproof gear until the tobacco leaves have dried. However, while rain gear can help prevent green tobacco sickness, it may contribute to overheating and dehydration, so workers should be mindful to drink enough fluids to replace those lost by perspiration. If possible, farmworkers should change out of clothing exposed to moisture (sweat, dew, rain) and tobacco as soon as possible, even if the clothing has since dried. Time is a factor in nicotine exposure, so that the longer an individual is exposed, the more nicotine may be absorbed into the bloodstream. For this reason, workers should take care to shower in cool, soapy water as soon as possible after leaving the tobacco field. Finally, workers should be sure to wash their work clothes before wearing them again.

### **What is the recommended treatment for someone suffering from green tobacco sickness?**

There is no special treatment or cure for green tobacco sickness. The most important action a sick worker can take is to stay hydrated to avoid dehydration. Workers should get adequate rest, take anti-nausea drugs as needed to allay symptoms, and drink lots of fluids, especially water. If there is continued vomiting and the worker cannot keep fluids down, the worker needs to be taken to the doctor and may require an IV to assist in rehydration.

### **What common myths or misconceptions need to be understood about green tobacco sickness?**

- Green tobacco sickness is not caused by pesticides. Although pesticides and heat illness both may cause symptoms similar to green tobacco sickness, they are distinct illnesses.
- Green tobacco sickness usually lasts no longer than 2 days and should not cause any long-term health problems.
- Rashes or other dermatitis are not an indication of GTS. Rashes can be a symptom of early heat illness, pesticide exposure, allergies, infections, irritation or other skin problems, but are NOT a symptom of green tobacco sickness.
- Smoking cigarettes does not prevent GTS. Although studies have shown a reduced risk of green tobacco sickness among individuals who smoke cigarettes, many cigarette smokers STILL get green tobacco sickness. Smoking is not an appropriate prevention measure against green tobacco sickness and is in fact more dangerous than green tobacco sickness.
- Drinking milk is not a treatment for GTS. Although there is no research supporting the efficacy of milk in treating green tobacco sickness, there is no harm to farmworkers in drinking it.

### **Green tobacco sickness is preventable! How can farmworkers prevent green tobacco sickness? Farmworkers can:**

- Cover bare skin. Wear long-sleeved shirts, long pants, shoes that cover the entire foot, hats and gloves.
  - Try to avoid working in tobacco fields while leaves are wet with dew or from a recent rain.
  - Wear rain gear or waterproof clothing while working in tobacco while leaves are wet.
  - Change out of clothing immediately upon leaving the tobacco field, even if clothes have dried.
  - Shower with cool, soapy water as soon as possible after working in tobacco to remove residue from the skin.
  - Wash work clothes after each use and before wearing to work in the fields again.
  - Stay hydrated! Being adequately hydrated is even more important if you wear waterproof materials in the fields (the body has a hard time cooling and may overheat) or suffer from green tobacco sickness (nausea and vomiting may cause serious dehydration).
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Supporting information for outreach workers: Green Tobacco Sickness curriculum - 3

### **How much water should a farmworker drink?**

Farmworkers need to replace fluids lost through sweating by drinking lots of water. On days when the heat index is less than 102, a farmworker needs to drink approximately one (1) gallon per day, or 2 cups of water every hour. When the heat index is greater than 102, a farmworker needs to drink approximately 2 gallons of water during the workday, or 4 cups per hour.

It is important to keep in mind that caffeinated beverages and alcohol may have a diuretic effect, causing the body to lose fluids through urination. For this reason, it is important to reduce the regular consumption of alcohol or caffeinated beverages and/or compensate by drinking even more water to remain adequately hydrated. Sports beverages are okay to drink as long as the worker is not diabetic or hypertensive.

Workers can become hyponatremic if they over-replace water. Hyponatremia is a rare, life-threatening condition in which there is so much water in the body that the salt level is diluted in the blood. Low sodium levels can cause a clouding of consciousness, nausea/vomiting, lightheadedness, dizziness, and in severe cases, seizures, unconsciousness or death. To reiterate, this condition is rare, and dehydration is much more commonly seen than hyponatremia.

One gallon equals 128 ounces, or four (4) quarts.

One quart equals 32 ounces, or 4 cups.

One gallon equals 16 cups of water.

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## GREEN TOBACCO SICKNESS

### Self Assessment

(to be completed after reading GTS content)

1. What is green tobacco sickness?
  2. How does someone get green tobacco sickness?
  3. What can be done to prevent green tobacco sickness?
  4. What are common symptoms for green tobacco sickness?
  5. Is green tobacco sickness life-threatening?
  6. Who is at risk of getting green tobacco sickness?
  7. What are the four main conditions that make it likely that someone will become sick from tobacco?
  8. How much water should a farmworker drink each day?
  9. What is the treatment for green tobacco sickness?
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## GREEN TOBACCO SICKNESS

### Self Assessment

(Answers)

1. What is green tobacco sickness?  
[nicotine poisoning caused by working in tobacco fields]
  2. How does someone get green tobacco sickness?  
[exposure of skin to wet tobacco leaves, diffusion of nicotine in water into skin and bloodstream]
  3. What can be done to prevent green tobacco sickness?  
[avoid working in tobacco just after a rain, early mornings while dew is on leaves; cover bare skin; wear protective water-proof clothing; change clothes after work in tobacco, even if clothes are dry; shower as soon as possible after leaving field]
  4. What are common symptoms for green tobacco sickness?  
[weakness, dizziness, headache, nausea, vomiting; rarely: mild respiratory difficulty, increased salivation – if these symptoms are severe, consider pesticide poisoning]
  5. Is green tobacco sickness life-threatening?  
[No, it is a serious condition but usually not deadly]
  6. Who is at risk of green tobacco sickness?  
[anyone can get green tobacco sickness, even if they have worked in tobacco before, or have never been sick before]
  7. What are the four main conditions that make it likely that someone will become sick from tobacco?  
[the key elements are wet tobacco, bare skin, the length of exposure to nicotine, and individual sensitivity]
  8. How much water should a farmworker drink each day?  
[approximately 1-2 gallons per day, which is the equivalent of 2-4 cups of water each hour – the amount depends on the heat index]
  9. What is the treatment for green tobacco sickness?  
[shower and change of clothes, rest, hydration, anti-nausea medications, and a trip to the doctor if vomiting persists]
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## GREEN TOBACCO SICKNESS

### Teaching Objectives

**The facilitator and farmworker participants will discuss:**

**1. What is green tobacco sickness?**

- a. nicotine poisoning through the skin
- b. symptoms are similar to pesticide poisoning and heat illness
- c. anyone who works in tobacco can get green tobacco sickness

**2. What are risks and contributing factors to green tobacco sickness?**

- a. wet tobacco
- b. heat, humidity, skin condition, alcohol consumption – relate to absorption
- c. length of exposure
- d. dose
- e. personal susceptibility

**3. How can green tobacco sickness be prevented?**

- a. appropriate clothing
- b. nicotine remains in clothing; change and wash
- c. hydration
- d. shower immediately after leaving field

**4. What are the symptoms of green tobacco sickness, the course of the illness, and available treatment options?**

- a. symptoms are similar to the stomach flu
  - b. symptoms are usually delayed by several hours after exposure; symptoms last several days
  - c. treatment includes rest, hydration, anti-nausea medication; there is no 'cure'
-

## GREEN TOBACCO SICKNESS

### Motivating / Learning Activity

*The motivating / learning activity is an opportunity to support knowledge acquisition and comprehension among participants on a given health topic. These activities should be interactive and should begin to engage farmworkers in critical thought about the application of health information.*

This is an opportunity to engage the group and to assess participants' comfort level and knowledge on the subject. You may find that the workers are very familiar with the topic and only require a review. Or, you may find that the topic is completely new or that there are misconceptions or mistaken ideas among the group. For this reason, it is a good idea to briefly note comments by the workers for further discussion.

#### **A few suggested activities are:**

- Cabbage game with questions related to green tobacco, prevention, treatment, first aid, etc.
  - Grab-bag full of items that are related to the prevention, treatment or exposure to green tobacco sickness
  - Clothesline game to determine appropriate clothes for wearing in field; prevention
  - Watch video, El Monstre Verde, invite questions from the participants
  - Use photo of scene or symptoms and invite workers to describe what they see, what they perceive the problem to be
  - Read fotonovella (Learning about Green Tobacco Sickness: Juan's Experience), invite questions and discussion
  - Use jeopardy game to review specifics about green tobacco (especially if the group seems familiar with the topic)
  - Use experiential method to illustrate diffusion of nicotine through water to skin: use something that only transfers color to skin when wet - when dry does not. Perhaps red cabbage or beets?
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## GREEN TOBACCO SICKNESS

### Empowerment Activity

*The goal of an empowerment activity is to develop skills, learn a new task, consider action to change one's situation, and / or begin exploring how to help oneself.*

This is an important opportunity to identify what farmworkers can themselves do to prevent green tobacco sickness.

- Do they have access to protective clothing (long-sleeved shirts or rain jackets)?
- Can they take a change of clothes with them to the fields?
- Do they have an opportunity to wash hands and arms with soap during the day to remove tobacco residue?

Bring along samples of the various medications that workers may use to allay some of the symptoms. Explain the dosage clearly.

#### **Reality check**

- Offer the example of cutting head and arm holes into a plastic trash bag to help prevent some exposure to nicotine.
  - Remind farmworkers that if they wear heavy clothing or raingear, they will need to drink additional water to remain adequately hydrated.
  - Remember to remove the rain gear after the tobacco has dried to prevent heat illness.
  - Wear light-colored clothing to reduce the risk of heat illness.
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## GREEN TOBACCO SICKNESS

### Sample Class Plan

Subject: green tobacco sickness

Date:

Time:

Topic: How can green tobacco sickness be prevented?  
(teaching objective 3 from green tobacco sickness module)

#### **Key points, information, skills or activities**

As a result of this health education session, participants will:

1. Identify appropriate clothing to be worn in tobacco.
2. Recognize that nicotine remains in clothing, even if dry, and can continue to put the individual at risk.
3. Explain the importance of adequate hydration.
4. Recognize the importance of showering immediately after leaving field.

#### **Teaching methods**

- Clothesline activity
- Cabbage game
- Use of visual aids
- Participatory reading of fotonovela
- Discussion
- Brainstorming

#### **Materials and preparation needed**

- Variety of clothing for clothesline and “change clothes”
- Variety of different sized water containers with equivalencies to total amount
- Pictures and drawings of workers in tobacco, with symptoms, etc
- Fotonovela
- Laundry detergent
- Paper and writing instrument for collecting participant comments
- Prepared cabbage ball with questions relevant to green tobacco sickness

#### **Supporting media**

Language and reading-level appropriate brochures or flyers to distribute NCFHP approved content in case of questions

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## Sample Class Plan: Green Tobacco Sickness curriculum - 2

*To begin, invite participants to reflect on their experiences working in tobacco. What do participants already know? What would they like to learn?*

**1. Identify appropriate clothing to be worn in tobacco.**

Green tobacco sickness is caused by nicotine being absorbed by the skin. The more skin that is covered by clothing (preferably impermeable), the better.

**▼ Learning activities**

- Clothesline activity to allow participants to choose appropriate clothing.
- Using drawings of workers in various states of attire; allow workers to explain how appropriate clothing can protect the individual.

**2. Recognize that nicotine remains in clothing, even if dry, and can continue to put the individual at risk.**

- Length of exposure is one factor that determines the severity of green tobacco sickness.
- Even if clothing has dried, nicotine remains in the fibers where it is in constant contact with the skin. Changing clothes immediately after leaving a tobacco field reduces the length of exposure to the hazard.
- Wash tobacco-exposed clothing before wearing again.

**▼ Learning activities**

- Brainstorm about things that are invisible but still dangerous – that although the nicotine cannot be seen, it is still in the clothing until washed.
- Read sections of fotonovela related to clothing exposure.
- Have change of clothing folded in a pile and a bottle of laundry detergent on table. Ask participants to explain how they are relevant to green tobacco sickness.

**3. Explain the importance of adequate hydration.**

Adequate hydration is essential for farmworkers. Not only can hydration prevent heat illness, it can reduce the effects of green tobacco sickness. If an individual with green tobacco sickness is unable to self-hydrate, a trip to the hospital may be necessary for an IV to assist with rehydration.

**▼ Learning activities**

- Use bottles/cups of water to illustrate the quantity that must be drunk daily to remain hydrated.
- Use picture of symptoms (nausea, vomiting) and discuss why hydration is an important preventive measure.
- Using a visual aid, discuss the relationship between protective clothing and hydration.

**4. Recognize the importance of showering as soon as possible upon leaving the field.**

- The longer the exposure, the greater the risk of green tobacco sickness.
  - Residue from tobacco leaves may have dried onto skin and will continue to put an individual at risk until washed off.
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Sample Class Plan: Green Tobacco Sickness curriculum - 3

▼ ***Learning activities***

- Brainstorm about things that are invisible but still dangerous – that although the nicotine cannot be seen, it may be on the skin and still being absorbed into the body.

**Suggested review activities (choose one or two)**

- play the cabbage game with a variety of questions to assess learning
  - show a picture of someone working in tobacco and invite workers to describe prevention methods
  - ask if there were any points that were unclear
  - invite questions from the group
  - distribute written/pictorial materials to reinforce the information learned
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## GREEN TOBACCO SICKNESS

### Support for Learning Activities

**These are a few suggested questions for the cabbage game. Feel free to write your own questions in addition to or instead of these. If the question is true/false, have the worker or another participant restate the sentence so that it will be true.**

- What is green tobacco sickness?
- Green tobacco sickness is caused by nicotine poisoning. True or False?
- Anyone can get green tobacco sickness. True or False?
- How does green tobacco sickness make you feel? / What are the symptoms of gts?
- What time of day should you avoid working in tobacco?
- What weather conditions make green tobacco sickness more likely?
- What should you wear to protect your body from exposure to tobacco?
- Wearing a plastic trash bag can help protect me while working in the tobacco. True or False?
- What are the three things I can do to start feeling better when I have green tobacco sickness?

#### **List of suggested materials for green tobacco sickness grab bag:**

- Long-sleeved shirt
- Long-pants
- Trash bag with holes cut for head and arms
- Soap
- Container of water
- Dramamine, benedryl, etc
- Container of detergent
- Cigarettes
- Rain coat

#### **List of suggested items for green tobacco sickness clothesline game:**

- Long pants
  - Long-sleeved shirt
  - Sleeveless shirt (wife beater)
  - Shorts
  - Flip-flops
  - Boots
  - Rain coat
  - Trash bag with holes cut for head and arms
-

Support for Learning Activities: Green Tobacco Sickness curriculum - 2

**List of follow-up questions for video or fotonovela activity:**

- What causes green tobacco sickness? Or why did (character's name here) get sick?
- How did green tobacco sickness make (character's name here) feel? What were the symptoms?
- What could (character's name here) have done differently to prevent getting green tobacco sickness?
- What should you do if you feel you might have green tobacco sickness?
- Do you have access to water and soap in the fields?
- Can you carry a change of clothes when you work in tobacco?

**Possible Jeopardy questions (with suggested point values):**

- 100 : What time of day is most risky for green tobacco sickness? Why?
- 100 : What kind of weather is most risky for green tobacco sickness? Why?
- 100 : What can a farmworker wear to protect against green tobacco sickness?
- 200 : Changing clothes after working in tobacco is a good idea. True or False?
- 200 : Washing with soap and water is one way to reduce the risk of green tobacco sickness. True or false?
- 200 : What are the common symptoms of green tobacco sickness?
- 300 : What are the three things a farmworker can do to alleviate symptoms of green tobacco sickness?
- 400 : What is the name of the chemical in tobacco that causes green tobacco sickness?
- 500 : What are several other health problems that farmworkers experience that have similar symptoms to (may be confused for) green tobacco sickness?
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## GREEN TOBACCO SICKNESS

### Recommended Resources for Outreach Workers

- ♦ Teaching Manual **Los Problemas de Pedro**  
University of Kentucky  
1999  
5 part booklet series English/Spanish  
Outreach workers and farmworkers

This teaching manual is comprised of a group administration methodology guide, the problem booklet, an answer sheet for use by students, an answer key booklet, and tips for using the story. The story is about two cousins from Mexico, one with experience working in tobacco and the other a novice. The story line is interrupted periodically by multiple choice questions that are later answered in the body of the narrative. The booklet is illustrated with rough sketches which do an adequate job of depicting each scenario. The tips booklet offers several good discussion questions to follow-up the narrative. This series is more useful as a learning tool for the outreach workers than the farmworkers themselves, as it is lengthy and somewhat inflexible in its format.

To use this exercise as a group activity, obtain printed copies from the University of Kentucky, Southeast Center for Agricultural Health and Injury Prevention, (857) 323-6836.

- ♦ Fotonovela **Aprenda sobre la enfermedad del tabaco verde: la experiencia de Juan**  
Wake Forest School of Medicine  
2001  
18 pgs Spanish/English  
Farmworkers

This black and white fotonovela serves as a good teaching tool for farmworkers about exposure, prevention and treatment of green tobacco sickness. The story does a good job of explaining the conditions that put a farmworker at risk of green tobacco sickness, how the nicotine is taken into the body, prevention methods, and the typical physical reactions to the sickness. The fotonovela does bring a few points into the story without giving them adequate context or explanation: milk and motion sickness tablets as remedies. The notion that smoking may afford a worker some protection against green tobacco sickness is addressed and discouraged. The characters convey the message that green tobacco sickness is preventable. The message is simply written and empowering for the farmworkers.

Available at [www.cdc.gov/nasd](http://www.cdc.gov/nasd)

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## Recommended Resources for Outreach Workers: Green Tobacco Sickness curriculum - 2

♦ Fotonovela **Jose llega a saber de la enfermedad del tabaco verde**

University of Kentucky  
2000  
21 pgs Spanish/English  
Farmworkers

This fotonovela offers an overview of one farmworker's experience of becoming sick from green tobacco. The authors offer a good explanation of the cause of green tobacco sickness, as well as a thorough discussion of preventive methods, such as wearing proper clothing, bringing a change of clothing and washing all of the tobacco residue off of skin as soon as possible. There are a few post-test questions at the end of the booklet to assess comprehension and learning. The layout of this fotonovela is confusing, and it can be challenging to determine where on the page the storyline continues. This tool cites diarrhea as a symptom of green tobacco sickness, which is uncommon.

Available online at: <http://www.mc.uky.edu/scahip/Josegts/JoseWeb.pdf>

♦ Flyer **Enfermedad del tabaco**

Wake County Human Services, Migrant Farmworker Health Program  
1998  
1 page, front and back; Spanish/English  
Farmworkers

This flyer details the cause, signs/symptoms, prevention, and treatment of green tobacco sickness in English on one side and Spanish on the other. The information is thorough and acknowledges that the symptoms of green tobacco sickness can be easily mistaken for heat stroke or pesticide exposure. Over-the-counter treatment options are listed, with appropriate guidance regarding their safe use. The quality of the flyer is low, in that it looks like a late generation reproduction of the original, but it could be a model for a new flyer.

Copy available at NCFHP

♦ Flyer **Sobre y para evitar la enfermedad del tabaco verde**

University of Kentucky, Southeast Center for Agricultural Health and Injury Prevention  
Unknown date of origin  
1 page, front and back; Spanish/English  
Farmworkers

This bottom half of this flyer offers good information on how to prevent green tobacco sickness, but the upper half seems targeted to an audience who does not work in the fields and needs to know the economic and social costs of green tobacco sickness. One side is written in English and the other in Spanish.

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Recommended Resources for Outreach Workers: Green Tobacco Sickness curriculum - 3

- ◆ Training Guide **Green Tobacco Sickness: An Agricultural Health Hazard**  
Northwest AHEC, the Department of Family and Community Medicine at Wake Forest University  
Trainings given in 2001  
7 section notebook mostly in English  
Primary Care Providers, ER staff, outreach workers

This training offers something for almost everyone except the farmworkers themselves. Much of the notebook is geared towards clinicians, with explanations of occupational medicine/health as relates to diagnoses and reporting. There is a lengthy section of photos that document the steps of tobacco production for those who have no experience in the field and a discussion of the physiology and epidemiology of green tobacco sickness for clinicians. Finally, and of most relevance for outreach workers, there is a printed powerpoint presentation with explanatory notes on patient education surrounding green tobacco sickness. Topics covered in this section include: appropriate educational techniques, commonly held myths about green tobacco sickness, a layperson discussion of exposure, prevention and treatment, and a discussion of existing educational materials and their effectiveness. Parts of this manual could be useful for outreach workers to review prior to initiating farmworker education modules.

Contact Dr. Tom Arcury of the PACE Project for more information

- ◆ Video clip **El Monstruo Verde**  
Wake Forest School of Medicine  
2002  
Spanish with English subtitles  
Farmworkers

This clip is part of a 53 minute video that includes a pesticide education section, a handler section and finally the brief section on green tobacco sickness called El Monstruo Verde. The video clip is brief and does a good job explaining what green tobacco sickness is, how to prevent it, and what to do if one becomes sick. The clip emphasizes the often not believed fact that anyone can get green tobacco sickness. There is discussion of the myth that smoking cigarettes before entering the tobacco field will protect the worker, with the point emphatically made that smoking cigarettes is more dangerous than green tobacco sickness. There is also a review of the differences between symptoms of pesticide poisoning and green tobacco sickness, which is very practical information for a farmworker to understand. The video clip is empowering and focuses on what the workers can do themselves to prevent green tobacco sickness.

Video available through:

Wake Forest University Environmental Justice and Community-Based Participatory Research projects. Thomas Arcury, Principal Investigator,  
Casa a Campotarcy@wfubmc.edu (336) 716-9126  
Department of Family and Community Medicine, Medical Center Boulevard  
Winston-Salem, NC 27157-1084

\*\*Two page brochure that accompanies video available at:

<http://www-apps.niehs.nih.gov/outreach-education/Documents/an1051-1100/AN001078.pdf>

Recommended Resources for Outreach Workers: Green Tobacco Sickness curriculum - 4

◆ Scholarly Article

Quandt SA, Arcury TA, Preisser JS, Norton D, Austin C. **Migrant farmworkers and green tobacco sickness: new issues for an understudied disease.** American Journal of Industrial Medicine 2000. 37:307-15.

Interviews with migrant and seasonal farmworkers have revealed that their incidence of green tobacco sickness is much higher than reported in rates of medical treatment or farmers' reports. This population is at significant risk of green tobacco sickness but have little control over their work conditions and little ability to seek treatment if needed. The article offers a sound introduction to the condition, its biological basis, epidemiology and exposure.

◆ Scholarly Article

Rao P, Quandt SA, Arcury TA. **Hispanic farmworker interpretations of green tobacco sickness.** J Rural Health. 2002 Fall;18(4):503-11.

This is an interesting article which compares the explanatory model that many farmworkers use to understand their experience of green tobacco sickness with the biomedical model. Researchers found that farmworkers usually attributed their sickness to other aspects of working in the fields, such as the heat or pesticides, rather than the tobacco. The researchers hold that medical professionals should better understand the explanatory model used by farmworkers in order to more effectively diagnose and treat green tobacco sickness.