
Tom Cargiulo, PharmD, BCPP, CAC-AD
Director, Substance Abuse Services

410-313-7238

tcargiulo@howardcountymd.gov

Cessation and Youth

- Lower quit rates than adults
- Lack of controlled studies of pharmacotherapy interventions
- Majority of would-be-quitters relapse in the first 48 hours
- Objective signs of withdrawal as early as 8 hours after cessation
- More controlled studies are needed

Cessation and Youth

- Cravings
 - Cue-elicited
 - Withdrawal-related
 - Stress induced

Cessation and Youth

- Project EX
- TAP (Tobacco Awareness Group, Helping Teens Stop Using Tobacco)
- TEG (Tobacco Education Group, Intervening with Teen Tobacco Users)
- N O T Program (Not On Tobacco)

Stages of Becoming Addicted

(DiClemente: Addiction and Change)

- *Precontemplation*
 - No thought of drug use
- *Contemplation*
 - Considering the Pros and Cons of Drug use
- *Preparation*
 - Cont. experimentation with few negative consequences
(harder to believe negative statements about use)
 - Protective factors are being undermined
- *Action*
 - Use becomes central in the person's life
- *Maintenance*
 - Continued dependence
 - Increasing loss of alternative rewards

Impact of Cigarette Smoke on Plants

Stevens Forest Elementary School (SFES)
Research Center

Table of Contents

Cover Page.....	1	5. Cigarette Art Work.....	12
Table of Contents.....	2	6. Supporting Studies	13
Stevens Forest Research Center.....	3	7. Plant Experiments	14
Study Advisory Group.....	4	HCPSS Essential Objectives	15
Current Research.....	5	Students' Questions about Smoking..	16
STEM-Related Activities....(Delay)...	6	Progress	17
Cigarette Insight Activities.....	7	Plans	18
1. Student Interviews.....	8	Additional Resources Needed	19
2. Internet Searches.....	9	Web Site	20
3. Examine Cigarettes.....	10	Contributors	21
4. Ad Hoc Discussions.....	11	And the Answer is.....	22

Click on a slide number button (above) to go to that slide. Click on any slide number (lower right corner of each slide) to return to the Table of Contents.

Click on any picture with a blue border to go to a high resolution copy of the picture. When there, click on the high resolution picture to return to the slide you came from.

Stevens Forest Research Center

Mission

- Help students learn the realities of scientific investigations

Strategies

- Research in which answers are unknown to students/facilitators
- Objectives, science processes evolve from the research

Disciplines/Projects

- **S**cience, **T**echnology, **E**ngineering, **M**ath (**STEM**) and other related disciplines
- Physics, chemistry, health, biology



Research Center

- Volunteer Staff
- 14'x24' area
- Lab equipment
- Workshop
- Computers
- Supplies

Study Advisory Group



George Pittman

Volunteer Director,
SFES Research Center

georgepittman@verizon.net



Thomas Cargiulo

Director, Substance Abuse Services
Howard County Health Department

tcargiulo@howardcountymd.gov



JoD Straub

Youth Services Coordinator
Howard County Department of Police

jodstraub@gmail.com

Current Research

Study

- Impact of Cigarette Smoke on Plants

Purpose

- Help students gain insights into the effects of cigarette smoking
- Help students learn about science, technology, engineering, math

Premise

- Students will internalize the effects of smoking by working with real data
- Direct answers to students' questions will have a long-lasting effect



Cigarette Insight Activities



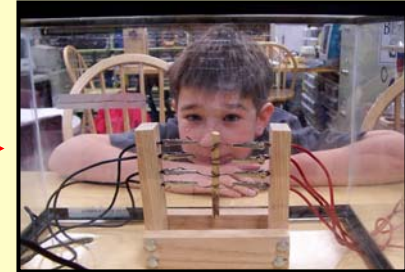
← 1. Student Interviews

2. Internet Searches →



← 3. Examine Cigarettes

4. Ad Hoc Discussions →



← 5. Cigarette Art Work

6. Supporting Studies →



← 7. Plant Experiments

1. Student Interviews

Interviewed 110 Students

- Topics: Smoking and Science
- “What do you know?”
- “What do you want to know?”

Analysis in Progress

- The students know about the health effects due to smoking
- The students’ questions about smoking reflect mature thinking
- Analysis being conducted by a middle school student volunteer



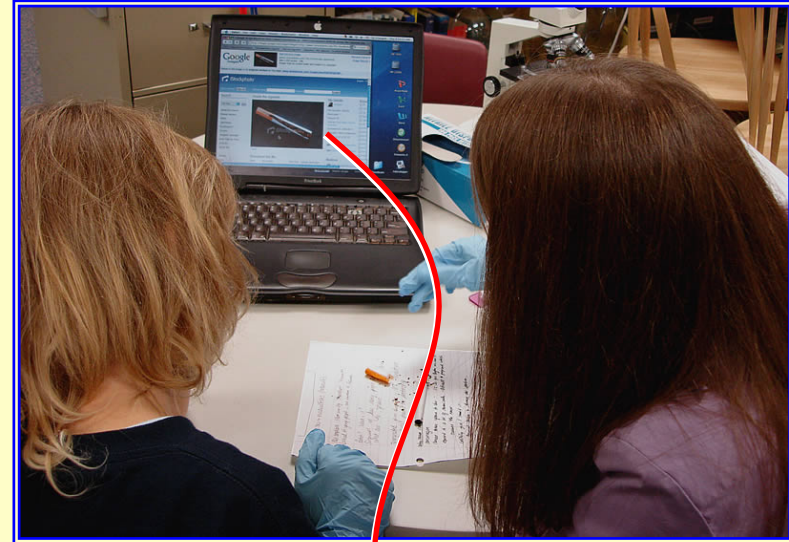
2. Internet Searches

Search for Answers

- Questions from interviews
- Questions from research

Follow-Up, Reinforcement

- Try things illustrated on Internet
- Find second source to confirm
- Assess credibility of sources
- Answers raise more questions



3. Examine Cigarettes

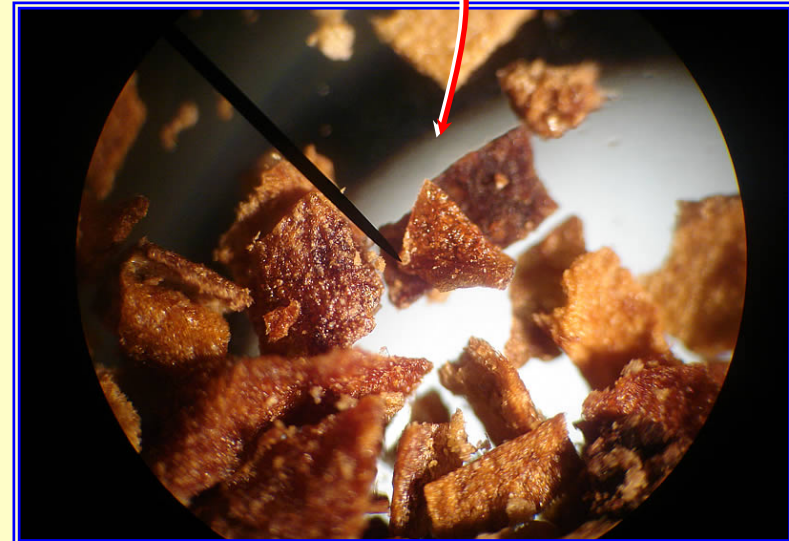
Students use Microscopes

- Discovering new worlds
- Students frequently choose to use the microscope over other activities at the Center



What do they look at?

- Tobacco from cigarettes
- Leaves from plant experiments
- Their hair, fingernails,...



4. Ad Hoc Discussions

Cigarette Materials Can Stimulate Discussions



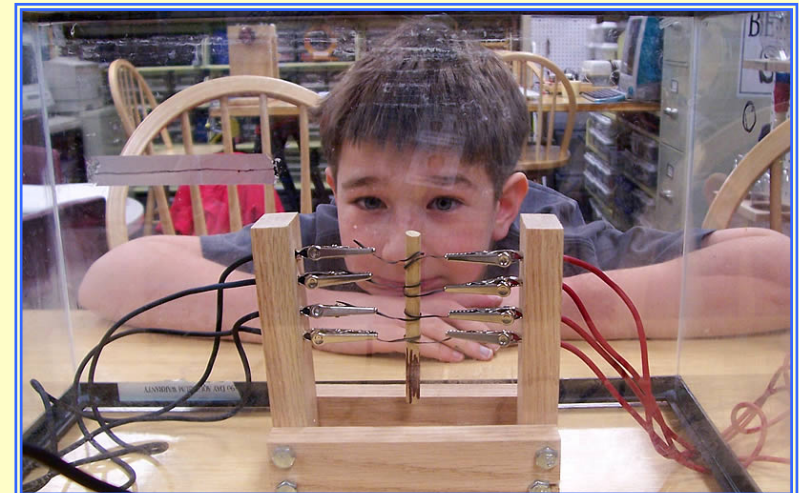
- “What does the label mean?”
- “Who wrote those words?”



- “What is the filter for?”
- “Does the filter work?”

Cigarette Experiments Can Stimulate Thinking

- “What are cigarettes made of?”
- “How do people smoke them?”



5. Cigarette Art Work

Illustrating Smoking Issues

- Various art forms; drawings, clay figures, flip paper “movies”
- Will be used to illustrate the SFES website for this study



Source of Smoking Issues

- Imagination →
- Internet searches
- Classroom lessons
- Research Center Experiments



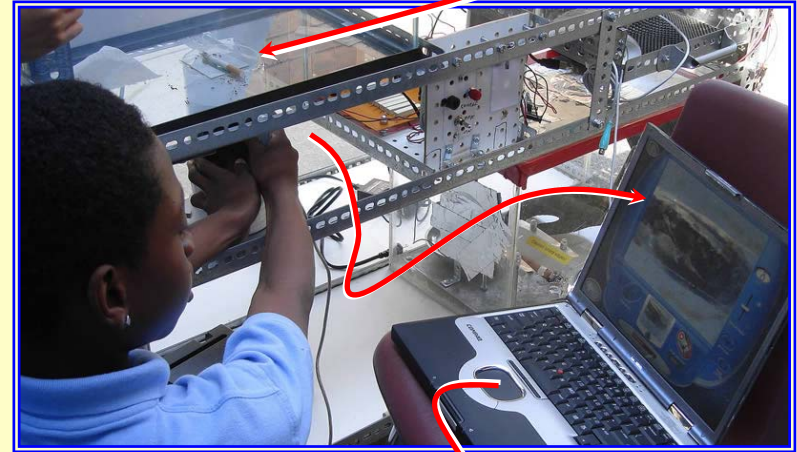
6. Supporting Studies

Two Types of Studies

- Support technology and engineering development
- Understanding and teaching more about smoking

Questions Addressed

- “What happens inside a cigarette when it burns?”
- “Does the burning change when a smoker breathes the smoke?”



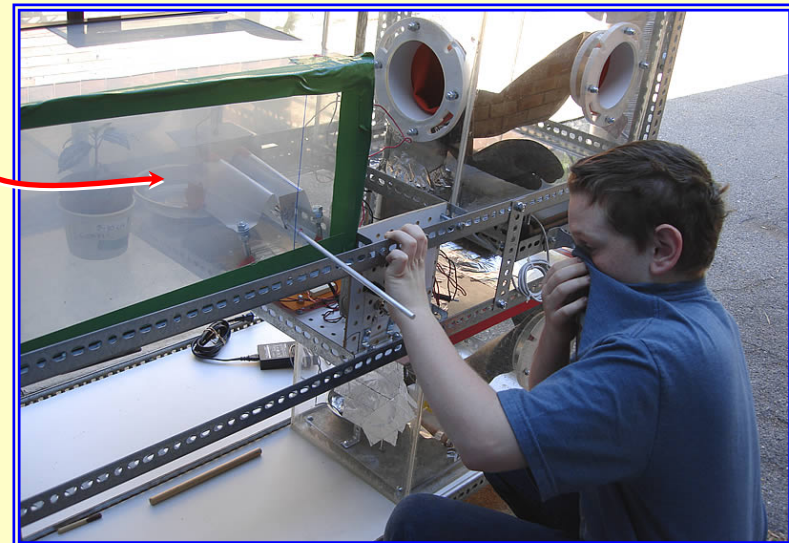
7. Plant Experiments

Preliminary Experiments

- Technology and engineering development took two years
- Many issues surfaced; e.g., how to seal the apparatus
- Science methodology evolving
- Qualitative data accumulating

Formal Experiments 2008

- Experimental apparatus ready
- Quantitative data to be obtained



HCPSS Essential Objectives

Tobacco, Alcohol and other Drugs Curriculum

- A. Identify effects of use/non-use of drugs on the body
- B. Distinguish between internal/external influences on drug use
- C. Recognize/analyze media influences on use of drugs
- D. Describe/practice effective refusal skills
- E. Practice effective decision-making skills for risky behavior
- F. Identify strategies to promote drug-free lifestyle
- G. Identify community resources to help with drug problems

Volunteer's observation: "Students know the harmful effects of smoking but do not really comprehend what it means to them."

Students' Questions about Smoking

“What do you want to know?” Preliminary Results

- A. What is smoke made of?
- B. Can you really get addicted, sick or die from smoking?
- C. How long do you have to smoke to get addicted, sick or die?
- D. How do the cigarettes harm you?
- E. Why do people sell harmful things?
- F. Why does the government allow it?
- G. Who invented cigarettes and how are they made?

Question occasionally asked of our volunteers: “How can I get mom and dad to stop smoking? They don't listen to me.”

Progress

2005/06

- Learned how to do this study
- Obtained needed resources
- Developed some technology →
- Started preliminary experiments



2006/07

- Expanded the technology →
- Started the engineering
- Continued the experiments
- Interviewed all 4/5th graders
- Created a first draft of website



Plans

2007/08

- Finish experimental apparatus →
- Continue new technology
- Continue cigarette insight work
- Start formal experiments
- Upload/maintain website
- Start exporting to other schools



2008/09

- Undefined →

Continue with cigarettes?
Start new research?
Do both as in 2005/06?

Additional Resources Needed

People

- Assessment of the program
- Volunteer facilitators
- Engineering expertise
- Website maintenance →
- Review of draft materials

Equipment and Software

- Data Loggers
- Good microscopes →
- Laser Goggles
- CAD Software



Web Site (using Firefox Browser)

Web Site Infrastructure

- 20 Activities
- Multiple Objectives/Activity
- Welcome, About, Previews, ...
- Dictionary

Content

- 4 objectives completed
- ~60 more planned

Location

- Email sfes.rc@verizon.net
- Web Address <http://www2.hcpss.org/sfes/Index.html>

Cigarette Loading Prototype

Objective: Select a cigarette loading design, build one, install the device in a prototype chamber and test it.

Welcome

Welcome to our part of the Stevens Forest Web site. We are Molly, Jenna and Rutherford and the **objective** of our research is at the top of this page. We hope you enjoy our work and are able to learn from our experiences; we certainly did.

What tasks do they need to complete to satisfy their objective?

Dictionary

objective (noun)

The specific purpose for which you do something.

An objective may be subdivided into individual tasks, and successful completion of all tasks would mean the objective had been satisfied. Often several objectives can be used to satisfy a goal. Success for all of the objectives would then mean you have satisfied your goal.

Other meanings include:

- Unbiased, independent thinking. (adjective)
- "The teacher was **objective** when judging the science fair."
- Based on the facts or physical characteristics and not subjective factors. (adjective)
- "We made **subjective** measurements of plant health (e.g., they looked sick) but the **objective** measurements (e.g., leaf count) gave us more reliable data."
- The lens (e.g. of a telescope, microscope) closest to the object being viewed. (noun)
- "The microscope **objective** was dirty which made it difficult to see the tobacco."

obvious (adjective)

Self evident; easy to see, recognize or understand.

occasional (adjective)

occasional (adjective): An event that happens now and then, not regularly.

Contributors

Funding

- HCPSS Health Curriculum Office
- Stevens Forest ES PTA
- The Horizon Foundation
- United Way of Central MD

Equipment

- HCPSS Central Office
- Shimadzu Scientific Instruments
- Stevens Forest ES Parents
- The Lazarus Foundation

People

- HCPSS Science Curriculum Office
- Howard County Health Department
- Howard County Police Department
- Oakland Mills MS Students
- Stevens Forest ES Staff, Teachers, Parents
- University of Maryland, School of Pharmacy Students

And the Answer is...

Study Question

- What is the impact of cigarette smoke on plants?

Answer

- The science **processes** that the students use to answer the question and the **insights** that they gain about smoking are what is important.
- The literal answer to the study question will have to wait for the experiments to be finished.

