

## Lesson Plan

### Grade levels: 6-8

**Purpose:** This lesson plan provides a simple classroom activity for teachers and students to help them better understand the global threat of malaria, and the methods of fighting its spread. As participants of Sweat for Nets, students will come to understand how they can take action against malaria through fundraising to purchase insecticide treated bed nets.

### Objective(s):

1. Participants will learn about the urgency of the fight against malaria.
2. Participants will better understand how the international community responds to deadly diseases like malaria.
3. Participants will have the opportunity to learn about and form their own opinions on the global debate on DDT, and how it is used to combat malaria in Africa.

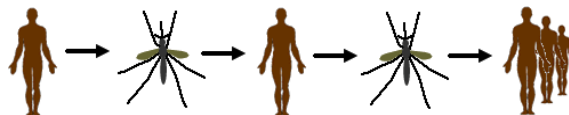
### Materials needed:

- Rachel Carson's book, *Silent Spring* (1962) excerpts, selected by the teacher. (Also see website: <http://www.nrdc.org/health/pesticides/hcarson.asp>)
- Research opportunities for students, either through internet, school library or public library.
- Information on insecticide treated bed nets ([http://www.cdc.gov/malaria/control\\_prevention/vector\\_control.htm#itn](http://www.cdc.gov/malaria/control_prevention/vector_control.htm#itn)).

### Lesson:

- Use the website [www.cdc.gov/malaria/](http://www.cdc.gov/malaria/) to introduce students to malaria and its harmful effects on children and pregnant women in many countries around the world.
- Ask students if they know how malaria is spread and explain that mosquitoes are the major carriers of the disease.

#### Mosquitoes and the spread of malaria:

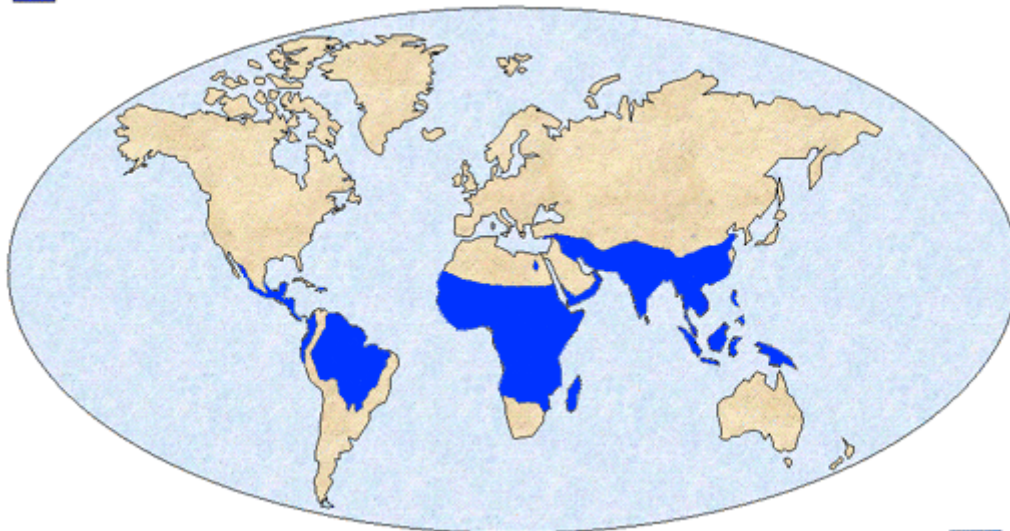


([www.schoolscience.co.uk/content/4/biology/abpi/diseases/disease9.html](http://www.schoolscience.co.uk/content/4/biology/abpi/diseases/disease9.html))

- Have students talk about pesticides and how we use them in the U.S (in farming, bug sprays and other products).

- See below some facts about DDT ([www.swissinfo.org](http://www.swissinfo.org)):
  - DDT was first synthesized in 1874 by German chemist, Othmar Zeidler.
  - In 1939, Switzerland's Paul Müller discovered its effectiveness as an insecticide.
  - It was widely used in the Second World War by both the Allies and Germany.
  - Müller won the Nobel Prize for medicine in 1948.
  - DDT played key role in malaria eradication program of World Health Organization.
  - In the 1960s, long-term residual effects caused environmental alarm.
  - Prohibited in the US and many other countries since the 1970s.
  - Global treaty in 2001 bans 12 persistent pollutants.
  - WHO achieves exemption for DDT to combat malaria.
- Students read the excerpt from *Silent Spring* (1962) and discuss the importance of the book at the time, and the paradox that it created regarding its usage in pest control in the U.S. and elsewhere in the world.
- What is the World Health Organization (WHO)? How are they related to other international groups like the United Nations? Ask students to discuss why the WHO might be allowed to use DDT to combat malaria even when it is banned elsewhere in the world.
- Where is malaria most prevalent in the world? Explain to students that many countries in central Africa, southeast and central Asia, South America have the highest rates of malaria.

 Distribution of Malaria



CDC

Geographic Distribution of Malaria

- How is insecticide like DDT used in combating malaria? What are other forms of fighting and treating malaria (i.e. medicines)? Explain the new push for insecticide treated bed nets to protect children and pregnant women from contracting malaria, especially in Africa.

*Examples of Insecticide Treated Bed Nets:*



**Project:**

- Divide students into two groups: one group will research the beneficial aspects of DDT with regard to malaria, and the other group will research the harmful effects of DDT and the rationale for banning its use in many countries.
- Questions for students to consider:
  - In what ways do we protect ourselves in the U.S. from malaria or other diseases (like West Nile Virus) transmitted by mosquitoes?
  - What did Rachel Carlson say in *Silent Spring* about DDT and its effects on the environment?
  - Why might some countries in central Africa or Southeast Asia not have adequate access to medicine for their populations to fight malaria?
  - Why is DDT beneficial in the fight against malaria when medicine is not available? How exactly is it used by the populations at risk?
- After a two week period of research, have students debate the issue in class. Begin with each side presenting their argument for 2 minutes each. Then have each side ask the other side questions regarding their facts and presentation. Each group will then have a closing statement that may last approximately 2 minutes. The teacher may make a decision on a winning group. Of course, this decision should be based on the best argument and strategy, as the real world debate is ongoing and remains controversial.
- *Optional:* Have students take on different roles within the debate in order to further complicate the issue. Possible roles could include; environmentalist, politician (from either an at-risk country or from the U.S.), and scientist.

**Conclusion:**

- This lesson plan aims to help students better understand their role in the fight against malaria by participating in Sweat for Nets. By introducing them to the urgency of providing help to those at risk, students are mobilized to participate in the global effort to eradicate the disease.
- By the end of this lesson, students should understand how insecticide treated bed nets are an important part of the fight against malaria, especially for those most at risk – children and pregnant women.
- You may use this lesson just before handing out the CFC Sponsor Sheets to be used throughout the Sweat for Nets program. As part of their outreach for sponsors, you may have students create their own handouts (either individually or as a class) to distribute to help others understand the overall goals of purchasing bed nets to protect children at risk.