How to Use This Module

The AMBIENT curriculum lead module is comprised of a number of segments. Some of these segments can be taught independently and others are meant to be used together in a certain order. The segments are presented roughly in order of planned presentation although it is noted when a segment can be skipped or used out of order. Each segment begins with a cover sheet for teachers describing its;

• Purpose
• Time required
• Required skills
• Key concepts
• Materials needed
• Assessment techniques

The following is a description of the segments and instructions on how teachers can use them to best suit their interests and the time they have allotted to the module.

NOTE: It is recommended that teachers alternate lecture format lessons with the lab-oriented segments to maintain student interest.

“Ethics Enigma”

The AMBIENT curriculum features shaded areas accompanied by the “Ethics Enigma” [put character here] in some of its exercises, which highlight ethical issues for teachers. These topics come in two forms:

1) A “Classroom Concern” – These are practical issues teachers may face when doing a given lesson. The ethics box points out pitfalls to avoid when carrying out an exercise.

2) A “Big Idea” – These highlight the larger ethical questions that face society as a whole, or particular segments of society as part of dealing with given environmental health issues. These include concepts of responsibility, harm, fairness and compensation. These boxes can serve as discussion starters during the work of the exercise.
Student Segments

Video Clips

- A 5-minute video segment produced by Weed and Seed, an inner city development organization, is a general description of the lead poisoning problem in Miami. It features images of children living in high-risk areas as well as commentary by public health officials and neighborhood activists. It is quite moving and can be a potent introduction to the lead problem.

- A local news story on lead contamination and lead poisoning prevalent in inner city neighborhoods

Scenario

- This is the core of the unit and is comprised of several exercises that develop the story of three toddlers diagnosed with lead poisoning. When doing the whole case study, the class is split into three groups (one for each toddler) and each group creates a "dossier" on their case with the exercises and research material they have gathered. This segment can also be abbreviated by doing only numbers 1, 3, and 5.

  1. **Scenario** -- This introduces the story in a short paragraph and prompts an inquiry-based learning model discussion, either in three groups (one for each toddler) or as a class. This exercise helps students identify the problem in their own words, establish what they know and what they need to know to find a solution. The students then take responsibility for making a research plan generated by their discussion. Topics that are easily researched include health effects of lead poisoning, risk factors for lead poisoning and how to protect oneself and one's children from lead. Websites may form the core of the students' research.

  2. **Home Inspection/Interview** -- This is a class project done in three groups (one for each toddler's family). Each group is given a page describing the health inspectors' notes and the students are expected to identify (based on their research) risk factors and protective factors for lead exposure in the written information. This exercise is intended to help students search for clues and generate inter-group discussion based on their research findings. A detailed answer key is provided for teachers.

  3. **Math Lab** -- This further develops the story using basic math calculations to describe sampling, mean blood lead levels, prevalence, expected rates and other simple epidemiological concepts.

  4. **Mapping Exercise** -- This asks students to translate information in tables to a map, and then to interpret their findings. This is an excellent lead-in to the more detailed Geographic Information Analysis segment below.
5. Nitty Gritty - Abatement -- This concludes the case study and asks the students to describe and discuss options for solving the problem of the lead-exposed children. It also requires that students discuss how to present the results of their research and make recommendations to the children's worried families.

**Geographic Information Analysis**

- This is a classroom exercise in which spatial data of several risk factors for lead exposure are provided. The kids are expected to analyze the visual data and to make predictions about where cases of high blood lead might occur in the Miami-Dade area. A map showing actual diagnosed cases of lead poisoning is then superimposed over the students' risk factor maps to "test" their hypotheses.

**Lead Labs**

- The labs (both the general concept and the lead labs) can be inserted as desired to emphasize scientific concepts such as measurement, experimentation, sampling, and mapping. The labs are of particular relevance to segments #3, 4, and 5 above.
  - **Particulate Demonstration** -- a teacher-led demonstration to help students visualize how lead dust is mobilized from soil.
  - **Lead Swab Lab** -- students identify possible sources of lead around their homes; note the commonness of lead in most households.
  - **Lead Extraction Lab** -- students bring in soil samples and use an acid extraction method to determine if they contain high levels of lead.
  - Results are plotted and compared to the high-risk map provided by the health department.

"Malade Papillion"

- This is a creative writing exercise which can be structured either as a "complete the essay" assignment, or as a starting point to generate new essays from the perspective of lead-affected families.

**Critical Reading**

- This introduces the scientific and political debate that currently swirls around the issue of lead. Two excerpts drawn from actual magazine articles lead the students to identify facts vs. opinions and to identify the messages the authors are trying to convey.

**Role-Play Debate**

- This adds a challenging conclusion to this module. Students use their accumulated factual knowledge and knowledge of current events to engage in the debate about the extent of the lead problem and the merits of possible
solutions. A variety of roles are suggested representing the many sides of this complex issue.