NO NAME, NO PICTURE

Instructor: (2003 Science Teacher Workshop participant)
School District: East Brunswick
Lesson Title: Food Irradiation: Solution or Threat
Grade: 10, 11,12
Overview: Students will research food irradiation and present this information to the class, conduct an informal poll of people to determine if they are willing to eat irradiated food, and then debate the positives and negatives of food irradiation.
Objectives: Students will be able to:

1. Research irradiated food on the Internet and present their information to the class for discussion.
2. Define what irradiated food is.
3. Explain how food is irradiated.
4. Discuss/Explain why food is irradiated.
5. Collect and present data of an informal poll of irradiated food consumption.
6. Research evidence to prove their position in a debate.
7. Present their positions (positive/negative) in a classroom debate on irradiated food.

Materials and Resources:

- Question sheet (Irradiated food content information)
- Computers with Internet access,
- nternet irradiation sites list from 2003 workshop (as a starting point for students).

Overview:

1. Students will be divided into groups of three and will be given 2 questions from the notes sheet on irradiated food to research and present to the class. Students will be responsible for presenting clear notes/diagrams on their assigned question and answering student questions. Also students will take notes on all presentations. A written note sheet from the group will be evaluated for content/accuracy/completeness and individual notes will be checked for completeness/accuracy.
2. Students will individually poll at least 10 people of varying age to determine whether or not they would eat irradiated food. The survey would also include asking the participants why they would or would not eat irradiated foods. Students may include additional questions they deem important to this poll with the teacher's approval. For evaluation, students will turn in their individual poll results and construct an individual and class pooled data graph of the irradiated food survey data.
3. Each group will then be assigned a "pro" or "con" position for food irradiation. Students will be given additional time to research information for their presentation on the Internet. The group will then present their position with at least three reasons/arguments and provide research or evidence as to why or why not food should be irradiated. Their informal poll cannot count as one of the three reasons but can be part of the presentation. After all of the group arguments have been heard, each group will have an opportunity to ask questions/give answers about the information they presented. All group members must participate in the presentation. Students will be evaluated on accuracy of content knowledge, supporting their arguments with evidence, and participation. At the end of the debate, the class will vote on whether or not they think food should be irradiated.
4. As homework, students will summarize in several paragraphs, their own opinion about consuming irradiated food. They should include at least three reasons why we should or should not irradiate food. Each reason should be supported with evidence/research. Again their informal poll cannot count as one of the three reasons, but can be part of the summary. The summary will be evaluated on accuracy of

content knowledge, supporting their arguments with evidence, and readability (spelling, grammar, etc.).

Follow up Activities: These could involve students going to supermarket to research the availability and price of irradiated food, experimenting with the "shelf life" of irradiated foods such as vegetables, and conducting taste tests of irradiated vs. nonirradiated foods.

Possible Student research questions

1. What is food irradiation?
2. How is food irradiated?
3. What sources of radiation are used to irradiate food and what are the advantages and disadvantages of each)?
4. What is the radiation dose to food? Is it the same for all food?
5. How does irradiation kill bacteria?
6. Does the FDA require special labeling on irradiated food? If so, explain what and how it has to be labeled.
7. How does the radiation affect the food itself? (is the food changed/altered in any way)
8. Is the safety of the food tested after it has been irradiated?
9. What other "food handling" problems does irradiation not protect against?
10. Can irradiation make food radioactive?
11. Are there alternatives to food irradiation?
12. Are there any other benefits to irradiating food than just killing bacteria?
13. Will irradiation increase the cost of the food?
14. Is the nutritional value of the food changed when it is irradiated?
15. How are pasteurization and irradiation related/different?

Resources:

- Food irradiation web sites as listed in the workshop binder

- www.ConsumerReports.org Irradiated meat 8/03 article

- www.graystarinc.com/genesis.html

- www.cdc.gov/ncidod/dbmd/diseaseinfo/foodirradiation.htm

- www.epa.gov/rpdweb00/rrpage/sources/food_safety.htm

- www.epa.gov/radiation/sources/food_irrad.htm