When you have your Results:
Peer Review & Reflection Student Guide

- **How does the intensity of radiation from radioactive strontium-90 change as a function of distance from the source?**

- **How do you know if your data and analysis are accurate?**

Now that you have completed one run of the Radioactivity iLab, it's time to *think about what your results mean*. A good way to understand your data is to share and discuss it with others who have also done the experiment. Scientists do this often to judge the quality of their data, and better understand the phenomenon they are studying.

Purpose
This activity is for you to figure out what kind of relationship exists between radiation and distance, and to see if your data makes sense compared with other students' data. The Radioactivity iLab is a real experiment, and everyone's results will be somewhat different, even if you had exactly the same parameter values in your experimental design.

The **goals** of this activity are to:
- Share your lab reports, data, and best-fit analyses in a small group.
- Try to determine the relationship between radiation and distance, based on your group's data and analyses.
- *Individually*, choose a new experimental design for the Radioactivity iLab that you will use in a second run of the lab.

Peer Review & Reflection Guide
1. Get in a group of 3-4 students.

2. Share your lab report and analysis with your group. Tell your group:
   – Your research question
   – The distances, measurement time, and number of trials you chose in your experiment design
   – The type of best-fit function (either linear or power) that best fits your data

3. Discuss the following questions:

- How do your research questions compare to each other's? What were you trying to study in this lab?
- Based on your analyses, what kind of relationship seems to exist between radiation and distance?

Does everyone's data show the same trend?

- Look back at your experimental designs. Did this have an influence on the trend shown in your analysis?
- How do you know whose data and analysis are accurate?
- If you were to do the lab again, how would you change your experimental design, to better examine radiation over distance?

4. Based on your group discussion, **decide on a new experimental design that you will use in a second run of the Radioactivity iLab**.

If your research question from the first experiment did not accurately describe what you were aiming to study in this lab, try to **improve your research question in the second run of the lab**.

After your group discussion, do the Radioactivity iLab a second time with your new design. Follow the same procedure as you did for the first experiment. Download and print your lab report and analysis document, and hand these in to your teacher.