

Measuring Dioxin in the Air

Analyzing the Data

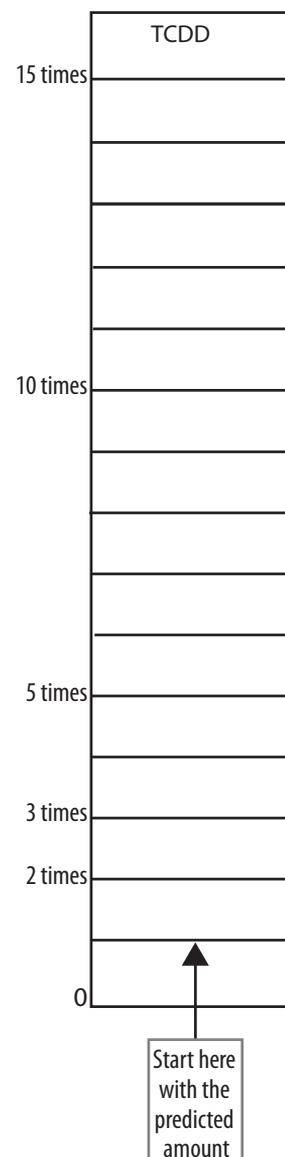
When the people of Matthews, NC, decided to fight for clean air (see p. 48), they got help from the Blue Ridge Environmental Defense League. In addition to holding meetings, talking with neighbors, and educating themselves about the issue, they had to analyze data like the kind you see in the chart below. If you were looking into air pollution data, you might analyze data like this. Try the hands-on activity below to get a feel for the numbers.



Comparison of Observed and Predicted Concentrations of Dioxin from an Incinerator (in fg/m³)

Type of Dioxin	Predicted	First Period Observed	Second Period Observed
TCDD	67	490	851
PCDD	204	594	1144
HxCDD	632	543	1402

A femtogram (fg) is 0.000000000000001 (or 10⁻¹⁵). A cubic meter (m³) of air is the amount of air that would fit inside a box with a length, width, and height all one meter. The predicted number is the amount expected based on a computer prediction. The observed number is based on data collected at nearby locations.



Making Sense of the Data

- Using the strip on the right, write in the predicted amount for TCDD. What would be 2, 3, 5, or 10 times that amount? Write those amounts in the spaces provided.
- Now find the observed amounts for TCDD. Where would those amounts go on your strip? Write a (1) where your first observed amount goes, and a (2) where the second one goes. How many times higher than the predicted amount are each of the observed amounts?
- Make strips for the other types of dioxin, and follow the same steps.
- Which dioxin type has the highest observed level? Which dioxin type has the highest level compared to the predicted amount? Is your answer the same for both questions, or different?
- What does it tell us when the observed numbers are different from the predicted numbers? What does it tell us when the observed numbers change from the first to the second period?