

# Contamination concentration - food chain game

**You will need:** multi coloured dried cat's biscuits or dog's biscuits, or >150 coloured counters or chips, 30 paper bags.

## Procedure:

1. List the elements involved in a food chain- producers (plants), herbivores (plant eaters), carnivores (meat eaters of prey- herbivores), carnivores (meat eaters of smaller mammals).
2. Discuss possible life forms which would combine to form a food chain: grass - cricket – bandicoot – Lesser Sooty owl.
3. Select a flat area about 20m. by 20m. An area of lawn or concrete would be acceptable.
4. Scatter the pet food biscuits in the designated study area.
5. Select two-thirds of your class to become crickets. Give each 'cricket a brown paper bag labelled with "C" for cricket. Each cricket collects the pet food biscuits/food portions /food portions and places them in the "C" brown paper bags. Crickets count the number of grass food represented by the food biscuits/food portions and record the number of all the coloured biscuits/ food portions on the bag.
6. Select all the rest of the students, (except for three students), to become carnivores such as bandicoots. Each of these students are given a brown paper bag labelled with "B" for bandicoot. Bandicoots catch the crickets and collect the crickets food bags. Bandicoots use the crickets recorded coloured biscuit/food portion tallies to calculate the numbers of the different food types. Crickets leave the study area leaving the bandicoots..
7. The remaining three students take the role of the top-order predator such as the Lesser Sooty owl. The owls are each given a brown paper bag labelled "O". The owls catch the bandicoots and collect the bags of food. Students calculate the total number of food portions collected and record the number of differently coloured biscuits/ food portions.
8. Present the scenario that "let's assume the red food portions represent a form of contamination". Use a calculator to find the mean score of contaminated food consumed by the crickets. (i.e. add all the red food portions collected by the crickets and divide by the number of crickets). Similarly, calculate the mean score of the number of contaminated food portions consumed by the bandicoots, and then for the owls.
9. Analyse the data. Students discuss the data in small groups and construct inferences, (Explanations that best describes the data). A trend should emerge, (e.g.that the higher up the food chain you go , the mean score of contaminated food intake increases).
10. Students are asked the draw conclusions from all of the responses. A conclusion might state that the effect of Contamination in a Food Chain increases the further up the food chain the food is consumed. An example of this occurred to osprey. Generations were lost when a toxin entered the food chain through farmers spraying a potent insecticide which protected crops. The effect of this toxin was to make osprey egg shells so soft that they would break when adults birds sat on them to incubate.