A FUN GAME FOR STUDENTS

deadly links!

This game provides a fun way for students to learn how pesticides enter food chains. People have developed pesticides to control organisms. Herbicides are used to control unwanted plants; insecticides to control unwanted insects etc. When these pesticides involve the use of poisons, these poisons frequently end up where they are not wanted. Many toxic chemicals have a way of persisting in the environment, and often concentrate in unexpected and undesirable places – from food and water supplies to wildlife and people too.

Materials

- White and coloured paper dots (other materials that can be easily picked up can also be used) – which represent food. Two thirds of the dots must be white and one third coloured. Thirty dots per student is recommended.
- One paper bag or small container. This is to represent the "stomach" of whichever animal is holding it. You will need enough paper bags for there to be one per "grasshopper" participant.

How to play

1. Explain to the students about food chains.

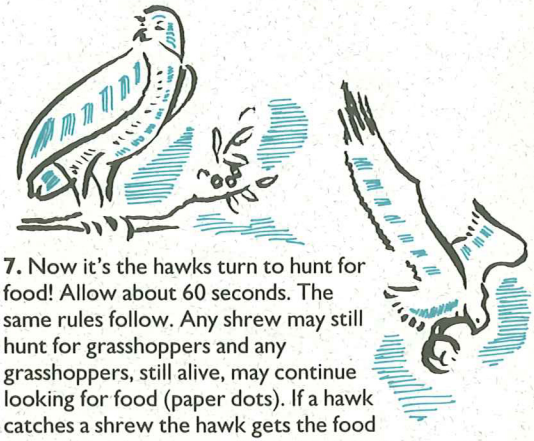
2. Divide the students into three groups – hawks, shrews and grasshoppers. Use some form of identification eg. arm ties. In a class of 30 students there would be 2 hawks, 6 shrews and 22 grasshoppers (approximately three times as many shrews as hawks and three times as many grasshoppers as shrews).

3. Give each grasshopper a small paper bag or other small container.

4. Define the limits of the area in which you are going to play and then distribute the white and coloured paper dots on the floor.

5. Give the students their instructions. The grasshoppers are the first to go looking for food (the paper dots). The hawks and shrews are to sit quietly on the sidelines watching the grasshoppers (watching their prey!). At a given signal, the grasshoppers are allowed to enter the area to collect food and place the food in their stomachs (paper bags). At the end of 30 seconds the grasshoppers must stop collecting food.

6. The shrews are now allowed to hunt the grasshoppers while the hawks wait on the sidelines. Give the shrew approximately 60 seconds. Each shrew should have enough time to catch at least one grasshopper. Any grasshopper caught by a shrew – ie. tagged or touched – must give its bag of food to the shrew and then sit on the sidelines.



7. Now it's the hawks turn to hunt for food! Allow about 60 seconds. The same rules follow. Any shrew may still hunt for grasshoppers and any grasshoppers, still alive, may continue looking for food (paper dots). If a hawk catches a shrew the hawk gets the food bag and the shrew goes to the sidelines. At the end of the time period ask all the students to come together in a circle bringing with them whatever food they have.

8. Ask the students who are "dead" (consumed), to identify themselves as what animal they are and which animal ate them. Ask the hawks to count the number of food pieces they have. They should count the total number of white

food pieces and the total number of multi-coloured food pieces they have in their food sacks. List any grasshoppers left and the total number of white and multi-coloured food pieces each has. List the number of shrews left and the number of white and multi-coloured food pieces each has.

9. Inform the students that there is something called a "pesticide" in the environment. This pesticide was sprayed onto the crop the grasshoppers were eating so as to prevent a lot of damage by the grasshoppers. This particular pesticide is one that is poisonous, accumulates in food chains and stays in the environment for a long time. In this activity all of the multi-coloured food pieces represent the pesticide.

- All of the grasshoppers that were not eaten by shrews may now be considered dead if they have any multi-coloured food pieces in their food supply.
- Any shrew for which half or more of their food supply was multi-coloured pieces would also be considered dead.

- The one hawk with the highest number of multi-coloured food pieces will not die at this time. However, it has accumulated so much of the pesticide in its body that the egg shells produced by it and its mate during the next nesting season will be so thin that the eggs may not hatch successfully. The other hawks are not visibly affected at this time.

10. Talk with the students about what they have just experienced in the activity. Ask them for their observations about how the food chain seems to work and how toxic substances can enter the food chain with a variety of results. The students may be able to give examples beyond those of the grasshopper-shrew-hawk affected by the pesticide in this activity.

11. Discuss with the students the possible reasons for using such chemicals, the benefits and drawbacks. Discuss possible alternatives.

LIENS MORTELS
résumé . . .

L'article relate un jeu de rôles amusant qui traite de l'introduction des pesticides dans la chaîne alimentaire. Les étudiants sont repartis en groupes. Chaque groupe joue un rôle different: sauterelles, musaraignes et faucons. Chaque animal doit chercher sa nourriture. Les sauterelles mangent les récoltes, les musaraignes mangent les sauterelles et finalement les faucons mangent les musaraignes.

Par la suite, les étudiants comprennent qu'un pesticide est entré dans le chaîne alimentaire. Ils en discutent les conséquences, les raisons positives et négatives de l'utilisation des pesticides et les alternatifs possibles.

Malheureusement, à cause des limites d'espace, nous ne pouvons pas publier ce jeu entièrement, ni en français, ni en espagnol. Si celà vous intéresse, vous pouvez nous demander une copie en français en nous écrivant au BGCI.

UNA CADENA MORTAL
resumen . . .

Se trata de un juego humorístico que explica a estudiantes las vías por las cuales pesticidas entran en las cadenas de alimentación. Los niños interpretan el papel de, por ejemplo, un saltamonte, una musaraña o de un halcón y cada uno de ellos se dedica a buscar sus alimentos. Los saltamontes se comen las cosechas, las musarañas ingieren a los saltamontes, una musaraña es preda de un halcón y cada uno de ellos se dedica a buscar sus alimentos. Los saltamontes se comen las cosechas, las musarañas ingieren a los saltamontes y finalmente, las citadas aves se comen a las musarañas. Después los participantes descubren la presencia de una pesticida en la cadena de alimentación y se les pide que determinen posibles consecuencias.

La posterior discusión puede centrarse en las razones que "justifican" la utilización de estos productos químicos, en sus ventajas e inconvenientes y en la busqueda de métodos alternativos.

Debido a la falta de espacio nos es imposible publicar la versión completa en los demás idiomas. Si estuvieran interesados en una traducción del juego, rogamos se pongan en contacto con la BGCI.

This game is from Project Wild, an interdisciplinary, supplementary environmental and conservation education programme which emphasizes wildlife. For further information about the programme contact: Project Wild, Salina Star Route, Boulder, Colorado 80302, USA.