

TEACHING NOTES

Pesticides on the Prairie

Learning Outcomes:

1. Define pesticide categories and list positive and negative aspects of agricultural pesticides.
2. Discuss biodiversity in prairie ecosystems and evaluate ecosystem services provided by prairie dogs.
3. Evaluate pesticide labels and EPA labelling requirements.
4. Identify issues of tribal sovereignty and multiple jurisdiction in environmental cases on tribal land.
5. Determine the roles of stakeholders in a specific environmental case.

Issues/Topics of the Case

1. Pesticide categories, regulation, labelling, and ethics of use.
2. Patchwork land jurisdiction due to the General Allotment Act of 1887.
3. Application of U.S. environmental regulations on tribal lands.
4. Trophic levels and migration of pesticides through trophic levels.
5. Interconnectedness of natural systems

Related Cases

1. Flathead Lake and Methylmercury: Treaty Rights & Human Rights
2. The Yakama Nation and the Cleanup of Hanford: Contested Meanings of Environmental Remediation.
3. Your Tribal Land is Not Secure: Traditional Knowledge and Science Face Wildlife in the Valley of the Wild Roses.

Additional Background Information: More information on the history of the properties discussed in this case is included in Appendix II. More information regarding federal regulations of pesticides (FIFRA) can be found on the EPA website: <https://www.epa.gov/laws-regulations/summary-federal-insecticide-fungicide-and-rodenticide-act>.

Intended Audience: This teaching case may be useful to students taking classes in environmental science, biology, chemistry, political science, tribal law, and Native American studies. The case is intended for college and high school classrooms.

Implementation and Use: This case can be used in several ways including group discussions and role-playing.

- (1) Group Discussion - students form discussion groups based on a random numbering system. Each group represents a different perspective of the case as described in the Discussion Questions section and is given 20-30 minutes for discussion. At the end of the session, each group reports out to the rest of the class, providing either their comments on each of the questions or the top three ideas they gained from their discussion topic.
- (2) Role-Playing – For smaller classes, a role-playing option may be useful. For role-playing, each student is assigned one of the following roles and must develop arguments based on how that individual or group of individuals would likely respond to a set of comments from the facilitator.

- a. The Rancher – Responsible for the property and actions of his employees; trying to reduce the number of prairie dogs on his property in order to maximize profits.
- b. The Ranch Hand – Responsible for distributing thousands of pounds of Rozol with a bucket and a ladle.
- c. The Tribe’s Game & Fish Department Director – Responsible for wildlife populations on tribal lands.
- d. The Tribe’s EPA Director – Responsible for environmental protection on tribal lands.
- e. U.S. EPA On-site Investigator – Responsible for investigating reporting incidents involving contamination of land, water, and soil.
- f. The Tribal Council (multiple students) – Responsible for making decisions on behalf of tribal members.
- g. Community Members (multiple students) – First reported the incident, follows up with tracking to see what happens.
- h. By-standers (2-3 students) – These are people who are looking on and making observations, trying to determine who in the story to believe.

Role Playing Script:

- 1) Each individual prepares an opening statement to introduce themselves to the group and explain their role (provided) and what they observed when they first entered the scene.
- 2) Then, the teacher reads aloud the following scenario and each individual must provide a point/counterpoint based on how their character would likely respond.

Scenario: A separate incident occurs on adjacent property that the rancher owns. Burrowing owls are found dead in a prairie dog town shortly after rodenticides were applied. This time, the pesticide was applied according to the label. The incident was reported first by community members and later that same day by the rancher. How would each character react? What lessons were learned in the first case that might assist in the response to the second case?

Group Discussion Questions:

Group 1: Pesticides

- If Rozol is considered a toxicant to the environment, why do ranchers continue to use this rodenticide?
- Are their justifiable reasons to use of anticoagulant rodenticides?
- Why would landowners put water, wildlife, humans, and their own livelihood at risk to poison prairie dogs?
- What are some other pesticides that are commonly used that have impacted your home area?
- Black-Tailed Prairie Dogs are considered an invasive species in agriculture, if you were a rancher could you think of other ways to stop them? What options are the most acceptable to you?

Group 2: Applications of EPA Regulations

- What two critical label requirements were not followed in this case? What do you think were the reasons they were missed? Do you think this is a common occurrence?

- What federal Act(s) did David Meyer violate? In the case, he was charged with the taking (i.e. killing) of six bald eagles. Should he have been charged with more? Why do you think this was the only charge?
- Does the Rozol label guidance reduce risk when the regulations are applied on real conditions on property? Is the regulatory apparatus enforceable in the areas of the country where prairie dog bait is most likely to be used? Do you think the honor-system is an effective and acceptable means of regulating these types of chemicals?

Group 3: Prairie Dogs and Prairie Ecosystems

- Prairie dogs are referred to as a Keystone Species – what does that mean and how do prairie dogs fit that definition?
- How did prairie dogs and bison help sustain native short-grass prairie ecosystems?
- What are some other species that benefit from the prairie dogs' ecosystem engineering?
- Are prairie dogs important in a ranching system? Can prairie dogs and cattle coexist?
- What tactics have been used to vilify prairie dogs in the public eye and are those tactics justified?

Group 4: Patchwork Land Ownership and Jurisdiction

- Using the Dawes (General Allotment) Act of 1887, explain how over 1 million acres of the Standing Rock Sioux Tribe Reservation is owned by private individuals, such as Maurice Wilder or David Meyer?
- During the investigation, what agencies were involved and what were each of their responsibilities?
- What was the role of the Standing Rock Sioux Tribe? Do you think their level of involvement was appropriate?
- Environmental cases that occur on tribal lands are immediately interagency and intergovernmental. Discuss the issue of tribal sovereignty as it applies to protection of wildlife resources and culturally significant species.

Suggestions for Additional Research:

For an extension activity, students could be asked to report on the influence of pesticides on bees. Neonicotinoids (or, "nicotine-like") pesticides have been linked to bee colony collapse disorder and general reduction of pollinators. Three of the main neonicotinoids pesticides were banned by the European Union in 2018, but many are still in use in the U.S.

<https://www.pbs.org/newshour/science/neonicotinoid-pesticides-slowly-killing-bees>

Suggestions for Assessing Student Learning:

For discussion groups, each group can be assessed using a rubric on the quality of their presentation by rating criteria such as content, organization, depth of responses, and delivery.

For role-playing activities, each student can be assessed using a rubric on the quality of their presentation by rating criteria such as content, organization, counterpoints and responses to counterpoints. Have the by-standers draft a paragraph about how they were influenced by the arguments and who made the strongest case. Remember to address issues of professional and respectful discussion among individuals with differing views. A goal is to be able to communicate your point in a professional, logical, and impactful way to influence the group.

References and Additional Resources:

A literature cited section is included at the end of the case study. For additional information, Tribal EPA websites often have a wealth of information about issues occurring in their regions. The U.S. EPA provides an overview of Environmental Protection in Indian Country at: <https://www.epa.gov/tribal>.

Prairie Dog Management Video from University of Nebraska-Lincoln Extension:

<https://www.youtube.com/watch?v=rXyZO53-tNs> – discusses the need for proper post-application surveys and disposal of prairie dogs and bait and different application processes for different pesticides.

Ecosystem Essential: The Prairie Dog Town: <https://www.youtube.com/watch?v=FJLrpYv13JY> – discusses the ecology of prairie dogs and their place in the ecosystem.

Prairie Dogs: Keystone Species: <https://www.youtube.com/watch?v=kEh4r4iQIBU> – discusses changes in the ecosystem provided by prairie dog activity.