Online Ethics Center
FOR ENGINEERING AND SCIENCE

L'Acide Case Scenario 4: Elected Official

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Description

This case includes the point of view of Team 4, the city council, for the L'Acide cleanup case. This case includes handouts for 4 teams, each with hidden agendas, to be used in class discussion.

Body

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The City of L'Acide is located on the Gulf Coast of the U.S. with a population of 20,000. The main industry is the assembly of semiconductors (employment = 1523). The second largest industry, a battery manufacturer, closed last year, with an attendant layoff of 800 people. The City has two elementary schools and one middle school. Most high school students attend Bezique High School, which is 8 miles away.

You are a member of the L'Acide City Council. Toxic substances, which may be contaminating the City's water supplies, have been found in the soil and ground water near the site of an old firing range that was deeded to the City by the military shortly after the Korean War. You do not like the fact you're your City has had to live with a contaminated site for decades, so the sooner clean up is done the better. However, you also want to balance the concerns about a clean environment and the

need for an improved tax base.

You concurred with the City's contract with the engineering firm, Benebaction, Inc., to remediate the 3 hectare hazardous waste site. Part of the deed transfer included the stipulation that the transfer was "as is." Bezique Creek runs through town and is about 200 m downstream from the site. The average water table depth is 3 m. In the 1990's a local college conducted soil and water sampling and found "traces" of trinitrotoluene (TNT).

The site is a *brownfield,* i.e. the City has already retained an architectural firm to design a combined residential and commercial center, including an elementary school, on the site. Benebaction has been asked to study the hazardous compounds found in the soil and ground water at the site and find the best way to render them nontoxic. The company's feasibility study (attached) includes probes from 10 monitoring wells that indicate that TNT concentrations range from "not detected" to 100 ppm. TNT ultimate degradation rates of these concentrations vary by the type of engineering controls being used. To reach ultimate destruction of the TNT, the company has provided the following estimates:

Natural attenuation: 15 years. (plume will reach drinking water well within 3 years).
Bioaugmentation alone: 7 years.
Pump and treat: 2 years. Will likely release VOCs without additional treatment.
Biostimulation and bioaugmentation: 1 year.
Biostimulation with genetically modified (GM) bacteria, with bioaugmentation: 3 months.
Above, with phytoremediation: 2.5 months.
Above, with GM plants: 1.5 months.

The last option, using genetically modified bacteria to treat the wastes, seems good to you. However, you understand that EI, a local environmental group, is concerned about the numerous uses of genetically altered species. Benebaction and your own research have convinced you that microbial growth and metabolism, as well as that of larger organisms, can be very efficient at degradation. This may be true, but EI has concerns about the specific strain of bacteria being recommended. Booboom A is a type of *Pseudomonas etemu* which has been investigated only in the laboratory, although it does seem to degrade nitrogenous compounds rapidly.

You are not sure whether the human health or the ecosystem risks has been fully evaluated, but you believe that in this case, “the perfect could be the enemy of the good.” Unless, you hear anything new at the upcoming meetings, you expect to continue to endorse the use of genetically modified bacteria to treat the wastes. Your stance is due mainly to the much more rapid treatment of a waste site that is costing the City money and which continues to be vulnerable to law suits and to threaten future water supplies.

Your Charge

Discuss the pros and cons of this approach and your role as an elected City Council in this case. Select a spokesperson from your group to represent you on today’s panel discussion at L’Acide’s town hall meeting on next steps.

Questions

1. How should the city engineers interact with the contractors?
2. What should be held paramount in this project to you as you represent the citizenry?
3. How might your decisions be influenced differently than those of the engineers in this case? What must the engineers do to gain your trust, even if that means taking an unpopular position?
4. How can you balance time of cleanup, costs and the right the thing to do in this case?
5. What are the potential conflicts of interest in this case?

Rights

Use of Materials on the OEC

Resource Type

Case Study / Scenario

Topics

Safety
Public Health and Safety
Catastrophes, Hazards, Disasters
Corporate Social Responsibility
Environmental Justice
Social Responsibility
Sustainability

Discipline(s)

Engineering
Environmental Engineering