

2001 Wisconsin Envirothon

Oral Presentation Topic – Urban Non-point Source Pollution

A Hypothetical Situation

The number of times that your local beaches have been closed due to unsafe water quality has been increasing over the past several years. In fact, your beach was closed 35 times last summer alone due to high levels of the bacterium *E. coli*. This bacterium indicates that other dangerous pathogens (organisms capable of causing disease) are likely to be present. Because this situation is unacceptable, your Task Force has been created to develop programs and/or policies to address this problem.

Your Task Force is made up of State Representatives, County Superintendents, and representatives from the following groups: County Health Department, the local sewerage district, Wisconsin Department of Natural Resources, County Parks Department, Citizens for a Better Environment, University of Wisconsin-Extension Agriculture Agent, the local environmental education center, a local Lawn Care Company and the local neighborhood association. To find answers and develop possible solutions to this problem, the Task Force developed three work groups: Research, Public Policy, and Public Outreach.

The research group has begun initial investigations, and has made these findings:

- Much of the contamination was thought to come from combined sewer overflows (CFO's) – situations usually caused by heavy rainfall where human fecal waste is dumped directly into the waterway without treatment, however the number of times that the sewers overflowed into the waterways does not account for all the days the beaches were closed.
- It appears that the bacterial contamination is coming from several sources including humans, bovines, canines and seagulls. This group has designed a study to identify the proportional contributions of the various sources of *E. coli* strains found at the affected beaches in your area.
- There are water monitoring devices at all the beaches, and in the streams draining into the lake. The test results are available to the public within 24-32 hours after the water samples have been collected.
- The areas closest to the beaches are the most urbanized areas.

No single agency has the overall authority or responsibility to address pathogen contamination – they all must play roles in addressing and solving the problem. The Task Force presentation should include the following:

- 1) develop long and short term solutions to the problem that would reduce or eliminate the need for beach closings;
- 2) how you would educate the public about this issue and gain their support for your solutions;
- 3) what group or organization would lead the projects and how would the solutions be funded.

Your Task Force will have 10 minutes to present their Beach Monitoring and Water Quality Plan. You may include maps, posters, or other visuals, however you will not have access to audiovisual equipment (or electricity). The entire team must take part in the oral presentation. You may use any outside reference material (please site source) you wish. The score sheet that will be used by the judges is attached.

Additional information:

1. The area watershed contains large amounts of both agricultural and urban lands. Livestock operations and septic systems are the most likely sources of bacteria in rural areas. Urban stormwater discharging to the river system is also a source of bacteria, particularly from dog wastes.
2. In addition to requiring States to set water quality criteria and standards for recreational waters, the Beaches Environmental Assessment and Coastal Health Act of 2000, which amends the Federal Water Pollution Control Act, requires local governments to notify the public of exceedances, or the likelihood of exceedances, of water quality standards for pathogens and pathogen indicators.
3. During dry and less intense rain storms, combined sewers transport wastewater to a sewage treatment plant where it is treated before being discharged into a waterway. However, during times of heavy rain, the volume of storm water plus sewage exceeds the capacity of the combined sewers, and the combined raw sewage and stormwater are discharged untreated into area waterways.
4. In 1999, beaches were closed 32 times and the combined sewers overflowed only 6 times.
5. Although there is no specific bacteria level data for the storm sewer outfalls, urban stormwater is known to contain significant levels of bacteria at times – depending on the surrounding land use and the rainfall intensities. The U.S. EPA, in its *Action Plan for Beaches and Recreational Waters (1999)* concluded that people who swim in water near storm sewer outfalls can become ill.
6. While no research studies have identified a correlation, the neighborhood association has stated that general trash and poor garbage collection could play a part in polluting the stormwater runoff.