

## Phytoremediation of Toluene Contaminated Soil by Green Needle and Tall Fescue Grass.

### Abstract

Phytoremediation is an emerging remediation technique due to its nondestructive nature and cost efficiency. One major problem with current bioremediation techniques is the use of invasive species which can cause further damage to the environment. The use of native species would eliminate the problem and they could be used in further reclamation. Investigations of the use of native species in phytoremediation are minimal however, they have great potential. The present work compares between a grass species known to remediate BTEX compounds, tall fescue (*Festuca arundinacea*) and a grass species native to Alberta, the green needle grass (*Stipa viridula*). The germination, growth rate, and biomass production were determined for both species in 2% toluene. The remediation ability of each grass species were measured on the ability to degradation toluene in the soil. Both grasses were found to be tolerant of toluene. However, the biomass of tall fescue was significantly different from the tall fescue controls. Green needle grass growth was not significantly reduced by toluene. Lastly as predicted tall fescue had a significantly greater amount of biomass produced when compared to green needle grass. There was no significant difference between the controls, green needle grass or tall fescue degradation of toluene from the soil. As a means of remediating toluene from soil neither green needle grass nor tall fescue were successful.