

# New Mexico Supercomputing Challenge Final Report

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**Project Title:** Solution to Artificial Turf Causing Cancer

**Team Number:** 36

**School Name:** St. Thomas Aquinas

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## **Problem Statement:**

Recently in 2017 there was a study on athletic turf causing various types of cancer and other types of illnesses. It is believed that the ingredient crumb rubber found in most athletic turf, was causing cancer and other illnesses such as leukemia, hodgkin's lymphoma, and neurological effects. We would like to find a solution to the problem by finding a different way to make safe and affordable sports turf. We plan on researching the problem to get information then we will research different ways that we can make sports turf that is cushioned and safe.

## **Procedure:**

First, we will do research on our topic. (Such as which substitutes to use for crumb rubber) Next, we will graph out our information on google sheets. Then, we will make a google slides presentation based on our collected data. Lastly, we will write the final report on a google sheets spreadsheet.

## **How We Determined the Best Solution:**

\_\_\_\_\_ We determined the best solution by graphing out all of the possible alternative materials to crumb rubber. This included styrofoam, cork, natural grass, and of course crumb rubber. We listed out all of the pros and cons of each material. We then found the best material to fit our needs.

## **Data:**

Type of Turf	Cost	Pros	Cons	
Cork	\$6 to \$20 per square foot	does not emit fumes	1) high cost	
crumb rubber (shredded tires)	\$5 to \$20 per square foot	low cost	1) emits fumes 2) Causes scarpes and burns	
Natural grass	\$1 per square foot	very comfortable when falling	1) requires high maintenence 2) can not be grown in a lot of states	
Styrofoam	\$0.07 per square foot	1) Does not emit fumes	1) Has to be replaces frequently	

This graph shows each material and its characteristics.

We experienced trouble creating a model for this particular project on Net Logo, which is why we decided to do it on google sheets. We found that cork was safe, but not affordable. Natural Grass was also safe but not easy to care for and can only be grown in a quite specific environment. Crumb rubber as stated before is affordable, but is easier to get hurt on than other substances. Styrofoam is very affordable and does not emit fumes. Just like natural grass it needs to be cared for.

## **Conclusion:**

\_\_\_\_\_In conclusion, we found that styrofoam fits our needs the best. It is both affordable and safe for athletes. This is why manufacturers should begin to use styrofoam rather than crumb rubber.

### **Most Significant Achievement**

Our most significant achievement was finding an alternative to crumb rubber. This will impact our community in a positive way and hopefully even the world.

***Thank You Mr. Vigil and Supercomputing Challenge Personnel!***