CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
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Project Number
J1920

Project Title
Toxic Cat Litter: Airborne Cat Litter Dust Spreading Zoonotic Diseases through Litter Box Cleaning

Abstract

Objectives/Goals
My objective was to determine which type of cat litter spreads the least amount of zoonotic diseases through airborne dust particles disbursed through litter box cleaning. I tested five types of cat litter (pine, corn, clumping-clay, non-clumping clay, and silica gel crystals), and sand as my control.

Methods/Materials
I simulated the cleaning of a cat litter box by adding Glo Germ powder to simulate bacteria, and modeling clay and water to simulate cat feces and urine. As I scooped out the #soiled# litter, litter dust carrying the Glo Germ would disburse into the air. I used a UV light to detect and measure the farthest distance the Glo Germ had spread from the litter pan, and recorded where the Glo Germ residue transferred on my body. I conducted a total of ten trials.

Results
Silica gel litter dust consistently spread the farthest distance in each of the ten trials, and recorded the farthest median distance of 213.63 cm. Clumping clay came in second with a median distance of 163.25 cm, followed by sand (137.13 cm), pine (121.38 cm), non-clumping clay (110.75 cm), and corn (91.13 cm). Silica gel also had the highest number of Glo Germ residue transfers, with a total of 71 transfers. Pine, clumping-clay, and non-clumping clay, all tied for second with 58 transfers, followed by sand with 54 transfers. Corn had the fewest transfers, at 44.

Conclusions/Discussion
The data did not support my hypothesis that silica gel crystals would spread the least amount of zoonotic diseases because it produces the least amount of dust particles. In fact, silica gel cat litter dust spread the farthest distance through litter box cleaning, while corn litter traveled the shortest distance. This research would benefit cat litter manufacturers who could improve their products through reducing litter dust, and educate consumers about the potential risks of infected cat litter dust, and help them select the cat litter that poses the least risk.

Summary Statement
After testing five types of cat litter and sand (control), silica gel crystal litter spread the greatest amount of zoonotic diseases through airborne dust particles disbursed through litter box cleaning, and corn litter spread the least.

Help Received
Dr. Harold Lin, Chief of Infectious Diseases at Kaiser Permanente Fresno, assisted with my research. My parents purchased supplies for my experiment and project board.