



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title Cereal Critters: A Study of Contaminants in Mass-Marketed and Organic Breakfast Cereals	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals I hypothesize that mass-marketed cereals contain fewer contaminants and microorganisms than organic cereals because pesticides are used in the growth of their key ingredients and chemical preservatives are used in their processing.</p> <p>Methods/Materials I purchased 10 mass-marketed and 10 organic cereals, noting preservatives, country of origin and packaging materials for each. I then measured ½ ounce of each sample and conducted a visual contaminant study vs. a pre-determined rating scale. I crushed the sample with a pestle, made a slide, and observed it under a microscope at a 4x magnification level, charting any observations. I added water to the specimen slide and observed it at a 40x magnification level, again noting any activity/findings. I repeated the process for each sample, comparing and drawing conclusions from my findings.</p> <p>Results There was no difference in the amount of visible contaminants and debris between the mass-marketed and organic cereal samples in a visual inspection. Contaminant levels observed at the 4x magnification level were also similar, with all debris in the minimal range. Organic cereals yielded contaminants in a greater magnitude and severity than did mass-marketed cereal at the 40x magnification level, 70% vs. 20% of samples. Most mass-marketed cereals studied used the chemical BHT as a preservative, while all organic cereals sampled used a natural preservative. Cereals containing fruit and those manufactured outside of the U.S. correlated to a higher level of contamination.</p> <p>Conclusions/Discussion Mass-marketed cereals contain fewer contaminants than organic cereals. While neither showed easily-visible debris, organic cereals showed markedly heavier and more contamination under microscopic magnification, a 50 percentage point difference. The use of pesticides and chemical preservatives in mass-marketed cereals appear to be effective in limiting contamination. Cereals containing fruit and those manufactured outside the U.S. have a greater likelihood of containing unwanted matter.</p>	
Summary Statement My project compared various mass-marketed and organic cereals under different levels of magnification in order to determine if one type had a greater presence of contaminants and microorganisms than the other.	
Help Received Mother drove me to the grocery stores & Father oversaw microscope viewing.	