

Lead in Mexican Candy in Oregon

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Purpose of this study

- To determine if lead-tainted candies imported from Mexico are available in tiendas in Oregon, specifically in four counties with high percentages of Hispanics (Multnomah, Hood River, Marion and Benton)

Significance of this Study

- There has been very little research on the availability of lead-tainted candies in OR.
- OR DHS has tested a few individual candies over the last few years.
- Percentage of the US population who are Hispanic is steadily growing

BLLs in Oregon

- In Oregon, an estimated 2000 to 5000 children have BLLs ≥ 10 $\mu\text{g/dL}$ (DHS, 2005)
- 4% of all children under the age of 6 years are screened; 6% of Medicaid-eligible children under 6 yrs are screened
- 9.5% of Oregon residents are Hispanic

Adverse Effects in Children

- Decreased intelligence (IQ points and test scores)
- Impaired neurobehavioral development
- Systemic organ damage
- No known threshold or safe dose for neuro-developmental effects

Sensitivity of Children

- Behaviors: crawling, hand-to-mouth, and pica
- Children take in more food/water per body weight than adults do
- Enhanced absorption from GI tract
- Brain, blood-brain barrier, nervous system and organs are still developing

FDA Limits

- In December of 2005, US Food and Drug Administration (FDA) lowered the amount of allowable lead in candy from 0.5 ppm to 0.1 ppm
- FDA Provisional Total Tolerable Intake for Lead (PTTIL) for children younger than 6 years is 6 μg lead/day
 - Includes lead from all sources including candy, Mexican pottery, home remedies, food, water and dust from leaded paint

Past Implicated Sources of Lead in Mexican Candy

- Leaded inks on the wrappers
- Lead-contaminated ingredients such as chili (salt) and tamarind:
 - To date, the source of lead is unknown: possibly from lead in soils where tamarind and chilis are grown or contamination during drying process (from leaded gas emissions)

California

- Has issued many health advisories regarding lead-tainted candies imported from Mexico (OCR, 2004)
- *Orange County Register* (OCR) published an investigation in 2004 which prompted the creation of a law mandating the state test candies from Mexico for lead
- Government officials and public health advocates were able to negotiate with three of the largest Mexican candy manufacturers to create a plan to eliminate lead from imported candies (OCR, 2006)

(http://www.ocregister.com/investigations/2004/lead/pdf/poster_spanish.pdf)



Tienda



Examples of Mexican Candy



Methodology

- Total Number of Tiendas by County: 11
 - Benton: 3
 - Hood River: 2
 - Marion: 2
 - Multnomah: 4
- Total Number of Candies by County: 142
 - Benton: 17
 - Hood River: 39
 - Marion: 14
 - Multnomah: 72

Results: Candy

- Total candy samples =142
- 55% (78) < 0.08 ppm lead (0.08 ppm= Reporting Limit)
- **45% (64) ranged from 0.08 to 2.2 ppm lead**
 - 88% (68) \geq 0.1 ppm lead (FDA limit)

Percentage by County Over FDA's Guideline for Lead in Candy (0.1 ppm)

- Benton County: 71% (10/14)
- Marion County: 71% (5/7)
- Multnomah County: 94% (30/32)
- Hood River County: 100% (11/11)

Results for Lead Values by Ingredient

No specific ingredient was found to be associated with lead levels in the candies.

Estimated Lead Ingestion Based on Serving Size

- One piece candy consumption: 33% of the samples exceed the PTTIL (6 μg lead/day) and range from 6 to 62.4 μg lead (10 times the PTTIL)
- Two pieces candy consumption: 63% of the samples exceed the PTTIL and range from 6.4 to 124.7 μg lead (21 times the PTTIL)
- Four pieces candy consumption: 86% of the samples exceed the PTTIL and the range is 7.2 to 249.5 μg lead (41 times the PTTIL)

Results of One Brand

- Total number: 18
- Candy range: <80-1000 $\mu\text{g/kg}$ lead
- Wrapper range: 90-5900 $\mu\text{g/kg}$ lead
- Stick range: <80-96,000 $\mu\text{g/kg}$ lead

Limitations

- Results may not be generalizable to other counties, states or countries
- Possible bias in how tiendas and candies were selected
- Limited number of candy wrappers and sticks were analyzed
- Lead can vary within a particular candy or particular brand
- Composite sampling and digestion may yield different results

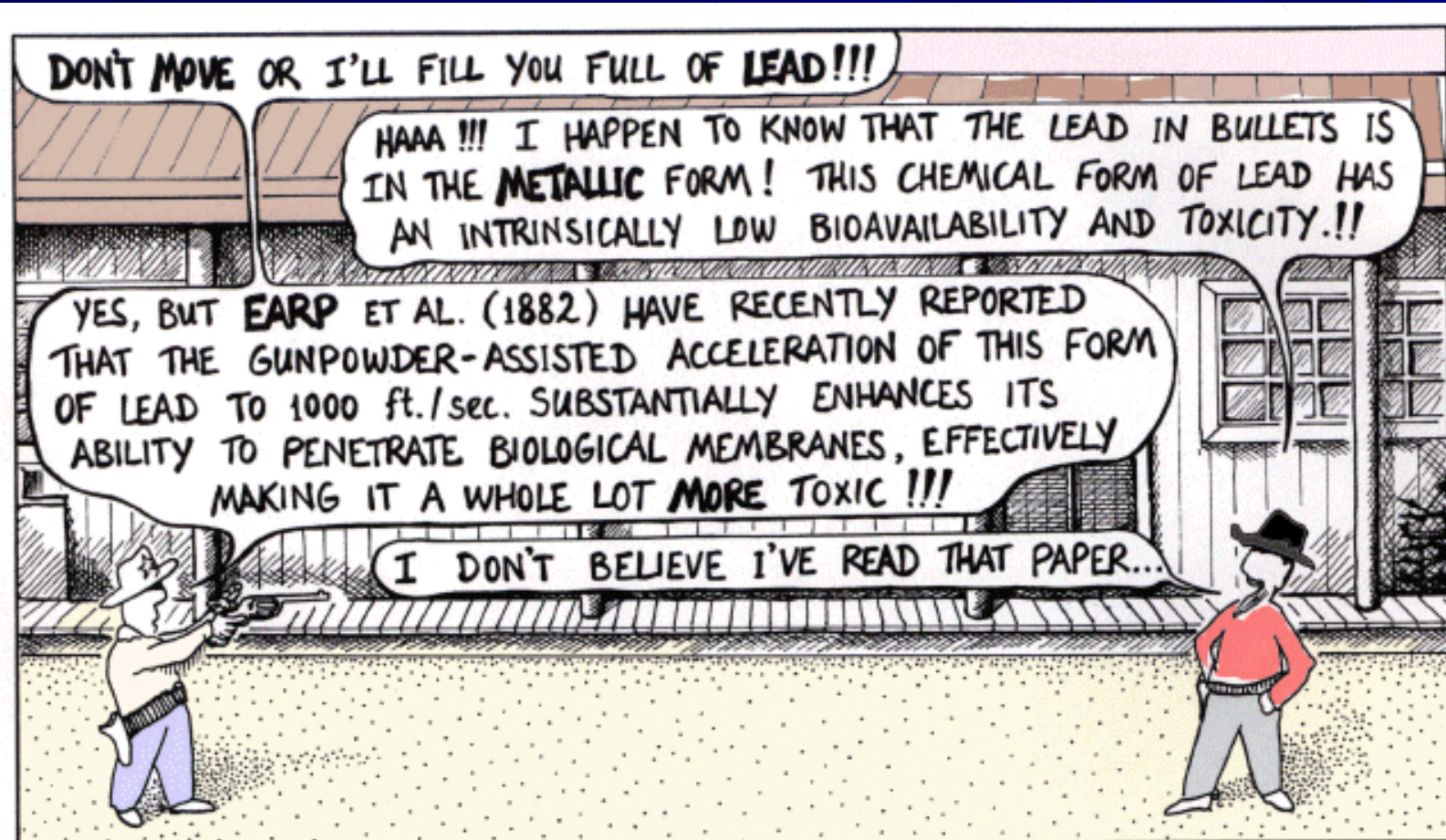
Conclusions

- Lead-tainted candies imported from Mexico are readily available in tiendas in the four counties selected in Oregon
- Mexican candy may be an important source of lead exposure in Hispanic and other children
- In testing one specific brand of candy, lead levels varied in individual candies, wrappers and sticks with extreme lead values found in the sticks
- Relationship between candy ingredients (tamarind, chili, sugar etc.) and lead content was not found
- Relationship between lead levels in wrappers or stems and lead levels in candies was not found

Recommendations

- Ongoing monitoring and enforcement by FDA, the Consumer Product Safety Commission (CPSC) and state health agencies is warranted to identify and eliminate brands of Mexican candies that contain harmful levels of lead
- Further investigation of the leachability of lead in candy sticks and wrappers is warranted
- Review of how CA has dealt with this issue for other states
- Culturally appropriate public health outreach and education is necessary

Questions?



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