



## First National Environmental Health Survey of Child Care Centers: Lead Results

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at CDC ACCLPP meeting March 23, 2004.

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## Survey Rationale and Target Population

- Survey was recommended in 2000 Federal Strategy
- 100,000 institutional (licensed) child care centers in continental US serving children under 6 years
- 4.6 million children under 6 years in those child care centers



## Survey Sample

- Nationally (CONUS) representative sample
- Random population-weighted selection from 30 primary sampling units (Metropolitan Statistical Areas or portions, or non-metropolitan groups of counties)
  - Appx. 11 institutional (state-licensed) centers/PSU; of 334 sampled centers, 68 were not eligible for the survey
  - Of 266 eligible centers remaining, 168 (63%) agreed to participate and completed the survey



## Questionnaire, Sampling and Analysis

- Center Director (usually) recruited by and answered survey questions asked by CPSC staff
- Two classrooms, 1 multi-purpose room, exterior bare soil; randomly selected
- Paint tested by XRF; dust and soil samples collected
- Samples analyzed for lead, selected allergens and selected pesticide residues



## Lead Measurements

- Paint (XRF measurement)
  - Painted building components, bookshelves and cabinets in sampled rooms
  - Exterior painted components, including play equipment
- Dust Wipe: Floor and window sill in sampled rooms
- Soil: Composite soil core in play area



## Data Limitations

- Classification may be biased from:
  - Sampling and measurement variation
  - Incomplete sampling of rooms resulting in missing a room with a LBP hazard
- Comparison with National Survey of Lead and Allergens in Housing (HUD and NIEHS, 1999-2000) indicates bias is small



### Significant LBP Hazard per HUD Lead Safe Housing Rule

- **Significant deterioration of LBP**  
Large surfaces: 2 ft<sup>2</sup> interior, or 20 ft<sup>2</sup> exterior;  
Small surfaces: 10% total area of a component type
- **Lead-contaminated dust**  
40 µg/ft<sup>2</sup> on floor; or  
250 µg/ft<sup>2</sup> on window sill
- **Bare, lead-contaminated soil**  
400 µg/g in play area; or  
1200 µg/g in > 9 ft<sup>2</sup> of bare soil in rest of yard



### Results: Significant LBP Hazards

- **Of 100,000 institutional child care centers nationally:**
  - **14% (9% to 22%) have significant LBP hazards**



### Factors Related to Significant LBP Hazards

- **p < 0.05:**
  - **Construction Year:** Centers in older buildings more likely
  - **Race:** Centers where majority of children are African-American as reported by Center Director more likely than those where majority of children are white
- **0.05 < p < 0.10:**
  - **Region:** Northeast/Midwest somewhat more likely than South/West
- **Note: No urban/rural difference (both 14%)**

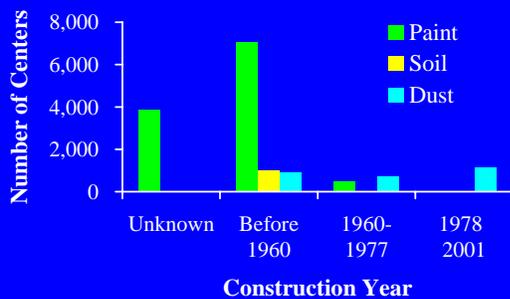


### Number of Centers with Significant LBP Hazards

99,952 Child Care Centers Nationally



### Centers with Significant LBP Hazards by Construction Year

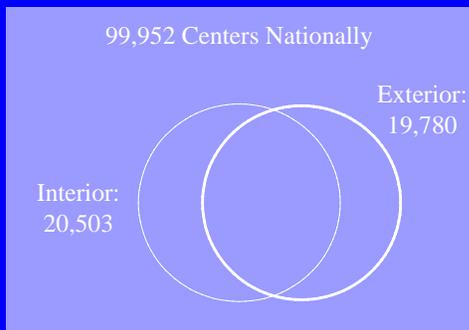


### Results: Lead-Based Paint

- **Of 100,000 institutional centers nationally:**
  - **28% (22% to 35%): some LBP**
  - **16% (10% to 24%): deteriorated LBP**
  - **11% (6% to 20%): significantly deteriorated LBP**



### Location of LBP

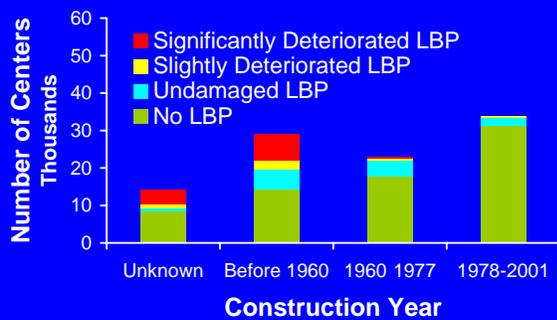


### Painted Components with LBP

- **Components most likely to have LBP:**
  - Interior trim, Exterior surfaces
- **Components with largest area of LBP:**
  - Interior walls, Exterior walls
- **Components with highest lead loading:**
  - Doors, Walls, Windows, Trim



### LBP Deterioration vs. Construction Year

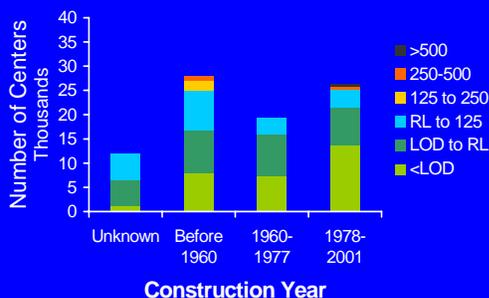


### Results: Dust Lead Loading

- **In 100,000 centers nationally:**
  - No floor samples had a dust lead loading  $\geq 40 \mu\text{g}/\text{ft}^2$
  - Window sill dust lead loading is higher than floor lead loading
  - 3% (1% to 7%) have window sill lead loading  $\geq 250 \mu\text{g}/\text{ft}^2$ 
    - Indicates a lead dust hazard in about 2,800 child care centers



### Window Sill Dust Lead Loading by Construction Year



### Results: Play Area Soil Lead

- **Of 100,000 institutional centers nationally:**
  - 4% (2 - 9%): no play area
  - 23% (15 - 34%): no play area soil
  - 38% (26 - 51%): no bare play area soil
  - 33% (23 - 45%): bare play area soil lead  $< 400 \mu\text{g}/\text{g}$
  - 1% (0 - 6%): soil lead hazards (bare play area soil lead  $\geq 400 \mu\text{g}/\text{g}$ )



**Summary: First National  
Environmental Health Survey of Child  
Care Centers: Lead Results**

- **Survey of 168 institutional child care centers representing 100,000 centers nationally serving 4.6 M children < 6 yr old**
- **28% have some LBP**
- **14% have a significant LBP hazard:**
  - 11% have significantly deteriorated LBP
  - 3% have a dust lead hazard
  - 1% have a soil lead hazard (and significantly deteriorated LBP)
  - 0.3% have significantly deteriorated LBP and a dust lead hazard