Management of Lead Wastes

Landfill Operators Training
February 22nd, 2012
Health Impacts from Lead

- Low exposure over a long period of time and high exposure during a short period of time have potential health impacts.
- Common routes of exposure include inhalation and ingestion.
- Adverse impacts to the central nervous center.
- Lead may affect the immune system, blood system and kidneys.
### Products That May Contain Lead

<table>
<thead>
<tr>
<th>Lead Pipes</th>
<th>Solder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stained Glass</td>
<td>Fixtures (casting)</td>
</tr>
<tr>
<td>Bullets/shells</td>
<td>Pottery Glazing</td>
</tr>
<tr>
<td>Sinkers</td>
<td>Dye/coloring</td>
</tr>
<tr>
<td>Candle Wicks</td>
<td>Some Medicines</td>
</tr>
<tr>
<td>Lead Crystal</td>
<td>Pewter</td>
</tr>
<tr>
<td>Lead flashings</td>
<td>Paint</td>
</tr>
</tbody>
</table>
Lead Use In Paint

- Prior to mid 1950’s white paint was very high in lead (as high as 70% lead)
- Many paints over 15% lead
- Used to:
  - Color the paint
  - Prevent corrosion and rust
  - Improve paint adherence
  - Resist cracking
- Still used today China
Percentages of Home Containing Lead-Based Paint

Older Homes are More Likely to Contain Lead-Based Paint

- Between 1960-1977: 25%
- Between 1940-1959: 66%
- Before 1940: 86%

Percentage of Homes Containing Lead-Based Paint

OSHA Regulations

- Apply to employees that disturb lead-based paint (29 CFR 1926.62 and 29CFR1910.1025)

- OSHA lead paint criteria is based on total amount of lead in the paint

- Criteria is 0.5% OR 5000 parts per million (ppm) lead

- Individuals may confuse the OSHA requirements with disposal requirements

- Lead Paint that does not exceed the OSHA lead paint criteria can be a hazardous waste
Thresholds For Metals In Paint

<table>
<thead>
<tr>
<th>HazWaste Metals (TCLP analysis results &gt; TCLP Limits = this Waste Code)</th>
<th>Total Digestion Paint Analysis Results BELOW ALL THE LEVELS LISTED mean paint removal waste SOLIDS will NOT be Hazardous Wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic (≥ 5 ppm = D004)</td>
<td>&lt; 100 ppm or &lt; 0.01 %</td>
</tr>
<tr>
<td>Barium (≥ 100 ppm = D005)</td>
<td>&lt; 2000 ppm or &lt; 0.2 %</td>
</tr>
<tr>
<td>Cadmium (≥ 1 ppm = D006)</td>
<td>&lt; 20 ppm or &lt; 0.002 %</td>
</tr>
<tr>
<td>Chromium (≥ 5 ppm = D007)</td>
<td>&lt; 100 ppm or &lt; 0.01 %</td>
</tr>
<tr>
<td>Lead (≥ 5 ppm = D008)</td>
<td>&lt; 100 ppm or &lt; 0.01 %</td>
</tr>
<tr>
<td>Mercury (≥ 0.2 ppm = D009)</td>
<td>&lt; 4 ppm or &lt; 0.0004 %</td>
</tr>
<tr>
<td>Selenium (≥ 1 ppm = D010)</td>
<td>&lt; 20 ppm or &lt; 0.002 %</td>
</tr>
<tr>
<td>Silver (≥ 5 ppm = D011)</td>
<td>&lt; 100 ppm or &lt; 0.01 %</td>
</tr>
</tbody>
</table>

Example: Paint is tested for all metals listed. The total digestion value for lead is < 100 ppm. Since there is a 20X dilution factor for TCLP testing on solids < 100 ppm / 20 = < 5 ppm. Therefore, solid wastes generated & TCLP tested could not be hazardous for lead, because even if all lead present leached the results could not be ≥ 5 ppm.

NOTE: Levels for ALL metals listed MUST be BELOW those listed to confirm that SOLID wastes will not be hazardous wastes. Any values at or above these levels, OR incomplete results mean that wastes MUST be sampled and analyzed for TCLP Metals.
Managing Paint Waste

- Two common types
  - Materials painted with Lead-based paint
  - Abrasive Blasting/Paint Removal Debris

- Both forms have potential to be hazardous waste

- Both must be evaluated and managed properly prior to disposal
Special Requirements
Residential Lead Paint Waste

- Applies to paint from residential structures that has been abated, rehabilitated, renovated & remodeled

- Includes paint debris, chips, dust and sludge that does not contain chemical paint stripper or free liquids

- Does not apply to this material if it contains a chemical paint stripper or free liquids

- Does not apply to nonresidential lead paint wastes
Special Requirements
Residential Lead Paint Waste

- **Authorized Disposal Methods**
  - Permitted and lined landfills, operations after Jan 1, 1989 meets municipal facility standards with leachate collection
  - Permitted C&D Landfills meeting 40 CFR part 257 subpart b (gw monitoring and financial assurance)
  - Permitted hazardous waste facility
  - Permitted demolition landfill (woodwork, walls, debris with paint still attached)

- **Prohibited Disposal Methods**
  - Disposal at Demolition Landfills
  - Incineration at Waste Incinerator or as RDF
  - Composting
Special Requirements
Residential Lead Paint Waste

- Landfill Operator Requirements

  - Ensure that your industrial waste management plan addresses this waste stream

  - Ensure waste is from residence

  - Ensure that TCLP testing of the waste is not required
Special Requirement
Demolition Debris

- Lead-based paint that is firmly bonded to the substrate can be
  - managed as normal demolition debris and
  - taken to a permitted demolition debris disposal landfill
- Cannot be used for recycling in a process has potential to release lead (crushing, shredding, etc.)
- Does not apply to lead-based paint that is not attached to the substrate
Managing Other Lead Paint Wastes

If the waste is a:

- Lead-based paint not firmly bonded to demolition debris
- Sandblasting wastes
- Paint removal wastes
- Residential lead-paint wastes with chemical stripper or free liquids

Then, the waste must be properly characterized
Evaluating Lead Paint Wastes

- Utilize Toxicity Characteristic Leaching Procedure (TCLP) for toxic metals
- Hazardous for lead if 5.0 parts per million or greater
- Must be managed as a hazardous waste
MPCA Publications

- Sandblasting and Other Air-based Blastings
- Managing Lead Contaminated Wastes
- Residential Lead-Paint Waste Disposal

All found at the MPCA’s website under Hazardous Waste Publications
